User's Manual

Remote-Motion CCD Network Camera

HNC700PT

HAWKING® TECHNOLOGY

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Before Using This Product

Net-Vision HNC700PT Remote-Motion CCD Network Camera

The network camera is not only a high performance web-equipped camera, but also a flexible surveillance system. Therefore, please ensure that the operation of such devices is legal in your area before installing this unit for surveillance. (Please note that in some instances, surveillance devices may be prohibited by law in your country.)

It is important that you carefully check the contents of the package against the "Package Contents" section of this user's manual after opening the package. Please read and follow the chapter titled, "Installation", to reduce any problems during use and prevent damage caused by abnormal usage.

The HNC700PT is a network device and those who have a basic understanding of networks and network devices should find this device to be easy to install, use, and manage. If a system error occurs and the device does not recover as a result of configuration, please refer to the "Troubleshooting" section of this manual to ensure the proper operation of this device.

The HNC700PT has been designed to incorporate various applications for video sharing, general security/surveillance, demonstration purposes, etc. You can maximize the potential of this network camera by familiarizing yourself with the "How to Use This Camera" section of this manual and by understanding the various functions and parameters of this device, which are described within. For creative and professional developers, the section titled, "URL Commands for the Network Camera", will be a helpful reference guide to customizing existing homepages or integrating with existing web servers.

Those paragraphs preceded by a symbol should be read carefully and fully understood. Ignoring warnings may result in serious hazards.

Unpack and Inspect

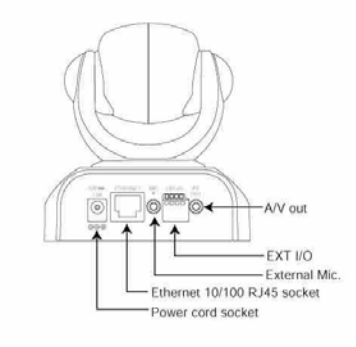
Open the package and carefully remove all items. The complete HNC700PT package consists of:

- One HNC700PT Remote-Motion CCD Network Camera
- One CD with software and installation utilities
- One quick installation guide
- One DC power adapter
- One camera stand
- One remote controller
- One A/V cable

Please check to make sure that the unit was not damaged during shipping and that no items are missing. If you encounter a problem, please contact your dealer.

Please read this manual thoroughly, and follow the installation and operation procedures contained within.

Hardware Installation



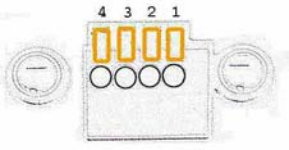
Please verify that your product package contains all the accessories listed in the foregoing Package Contents. Depending on the user's application, an Ethernet cable may be needed. The Ethernet cable should meet the specs of UTP Category 5 and not exceed 100 meters in length.

⚠ Connect the power adapter jack to the Network Camera before plugging in to the power socket. This will reduce the risk of accidental electric shock.

Upon powering up, the device runs through a self-test procedure and the front LEDs will blink between green and red a few times. If self-test passes, the LEDs will shut off and the Network Camera will be on stand-by and ready for software installation. If self-test fails the red LED will blink several times. Refer to Appendix A for troubleshooting.

The Network Camera provides a general I/O terminal block with one digital input and one relay switch for device control. Pin 1 and Pin 2 can be connected to an external sensor device and the state of voltage can be monitored from the initial state 'LOW'. The relay switches Pin 3 and Pin 4 can be used to turn on or off an external device.

⚠ Consult with the dealer of the peripherals for correct installation.



1	DI+	INPUT (Max. 50mA, 12VDC)
2	DI-	INPUT (Initial state of DI is Low)
3	SW_COMMON	OUTPUT (open from SW_OPEN at initial state)
4	SW_NOPEN	OUTPUT (Max. 1A, 24VDC or 0.5A, 125VAC)

Installation

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Software Installation

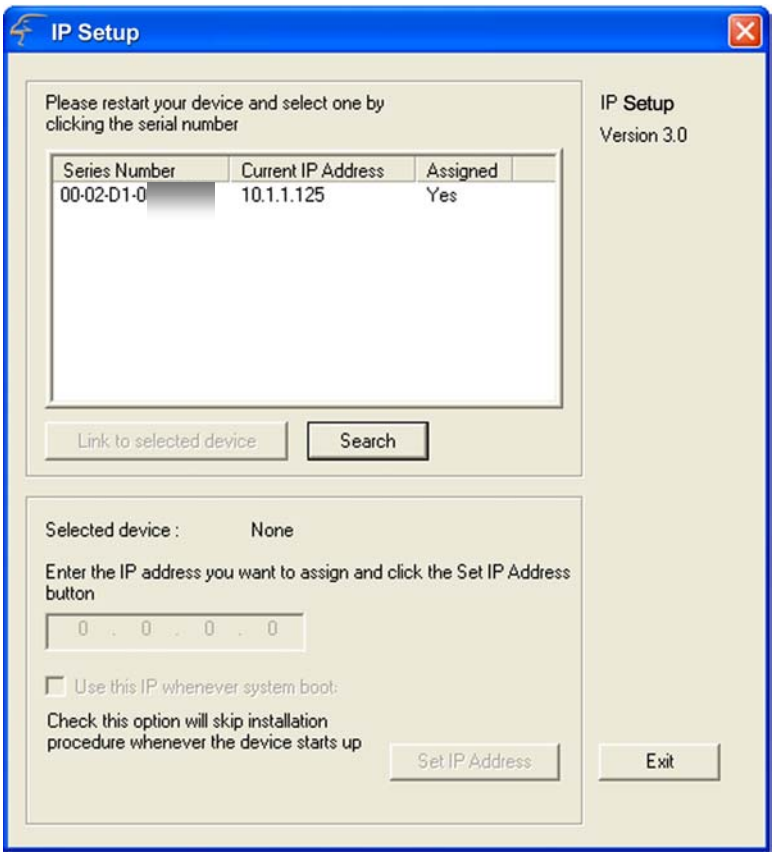
In this manual, "User" refers to anyone who has access to the network camera, and "Administrator" refers to anyone who has access rights to configure the network camera and grant user access to it.

At the end of the hardware installation, the Administrator must insert the CD included with the package into the CD-ROM drive of the PC. An auto-run program will appear (see below). If an auto-run window does not appear, go to the root directory of the software CD and click on “autorun.exe”). Run the IP Setup program (see below) to locate the newly installed network camera.

On the packaging of the product, beneath the UPC code, as well as on the label that appears on the product, you will find a sequence of four letters. Most Hawking network cameras with the sequence “HVVT” that are on standby awaiting software installation will be located by the IP Setup program. (Hawking network cameras with other four-letter sequences can be located by installer programs that correspond to their respective sequences.) Therefore, there may be several entries shown in the window. Administrators can differentiate between the network cameras by MAC Address (also listed as “Series Number”) and click on entries with the "Assigned" field labeled "No" to perform software installation. The serial number is printed on the labels of the package as well as on the label on the network camera body.

Click on IP Setup to execute the installation program. The IP Setup program will search for similar cameras on your local area network. A “similar” camera will have the same “HVVT” code at the beginning of its serial number. (The ***serial number*** is different from the ***series number/MAC address***.)

After completing the search, the main IP Setup window will appear. The IP Setup program should have returned an IP address for your network camera (under the "Current IP Address" heading) that is consistent with your existing LAN settings. The IP address will likely have been found by the DHCP server. (A DHCP server provides IP addresses to client devices on the same network.) If there is no DHCP server, the camera will try to find a free IP address (this takes from 15 second to 3 minutes, depending on the LAN status). After an IP address is assigned to the camera, the "Activity" status LED blinks.


IP Setup
Please restart your device and select one by clicking the serial number
Series Number
Current IP Address
Assigned
00-02-D1-0
10.1.1.125
Yes
Link to selected device
Search
IP Setup
Version 3.0
Selected device : None
Enter the IP address you want to assign and click the Set IP Address button
0 . 0 . 0 . 0
Use this IP whenever system boot
Check this option will skip installation procedure whenever the device starts up
Set IP Address
Exit

Click on the "Series Number" (same as MAC Address) of the desired camera. (If the IP Setup window does not display any devices, you will need to find a tool small enough to be inserted into the reset hole on the left side [if facing the front of the camera] of the base of the camera. Hold the button for two full cycles. [The two LEDs will flash continuously and stop twice. When the red LED begins to flash after the second stop, release the button.])

If the IP Address returned by the IP Setup program is not consistent with your LAN settings or you want to change the IP address manually, you can go to the bottom half of the window, and assign an IP address in the IP address bar.

Administrators can fix the device's IP address by checking the option "Use this IP whenever system boots". Then click "Set IP Address". (It is recommended that you click the checkbox.) This will allow administrators skip future installation procedures. Otherwise, the unit will need installation each time it is restarted.

If the IP address is not already being used by another device on the network, IP Setup will continue with the setup. Otherwise, another message window will appear, warning that the assigned IP conflicts. In this case, administrators should search for a vacant IP address or ask the network supervisor for assistance.

If the setup is successful, click on

in the message window that appears. The "Assigned" field will then be labeled "Yes". Please note the address information for reference and future requests by users. (If any error dialog boxes appear, other than “Set IP OK”, please see the instructions that follow.)

The Administrator can click on “Link to selected device” to connect the network camera to Internet Explorer.
If the camera is not on the IP Setup list, click on the “Search” button to search for the camera on the LAN.

Check Network Settings (even if the device is already connected)

Although the network camera may already be connected following the software installation procedure, administrators should ensure that the network settings in the configuration page are correct, including the subnet mask, IP address of the gateway, and DNS. If necessary, ask the network administrator or Internet service provider for specific information regarding the network settings. By default, the network camera will require installation every time it reboots. If the network settings are certain to work all the time, you can disable the install option. Refer to the "Network Settings" section of this manual or the "Network" page of the web interface for details. If any of the settings are entered incorrectly and the network camera is non-responsive or freezes as a result, you can easily restore the factory settings by following the steps outlined in the "Troubleshooting" section of this manual.

Add a Password for Security

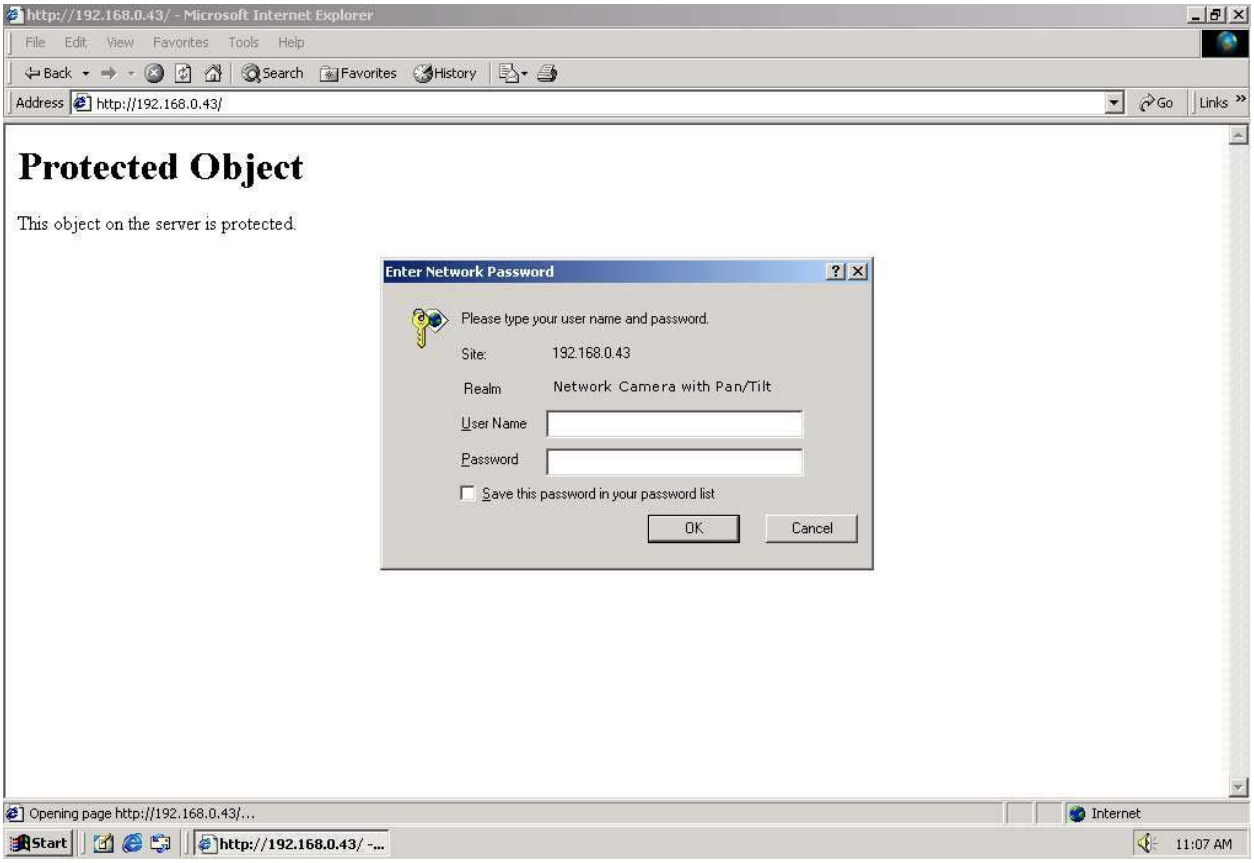
Since the administrator's password is blank by default, the network camera will not ask for a password. However, it is recommended that the administrator change the password to protect from network intruders. Once the administrator's password is saved, the network camera will require a user name and password for access. The administrator can establish, at most, twenty user accounts. This enables each user to access the network camera. However, the user will still be restricted from making changes to the system configuration. Critical functions, whose access is limited to administrators only, include system configuration, user administration, and software upgrades. The administrator's user name is assigned to "root" permanently. Once the password is changed, the browser will display an authentication window to ask for the new password.

Please Note: There is no way to access the administrator's password. Therefore, if the password is forgotten, the only solution is to restore the factory default settings.

Authentication

After opening the Web browser and typing in the network camera's IP address, a dialogue window may appear, requesting a username and password, ***unless the administrator has not saved a password***. Upon successful authentication, the device's main page will be displayed.

In the figure below, the foreground is the login window and the background shows the message when authentication fails. The user can check the option box at the bottom of the pop up window to save the password for future convenience.



How to Use This Camera

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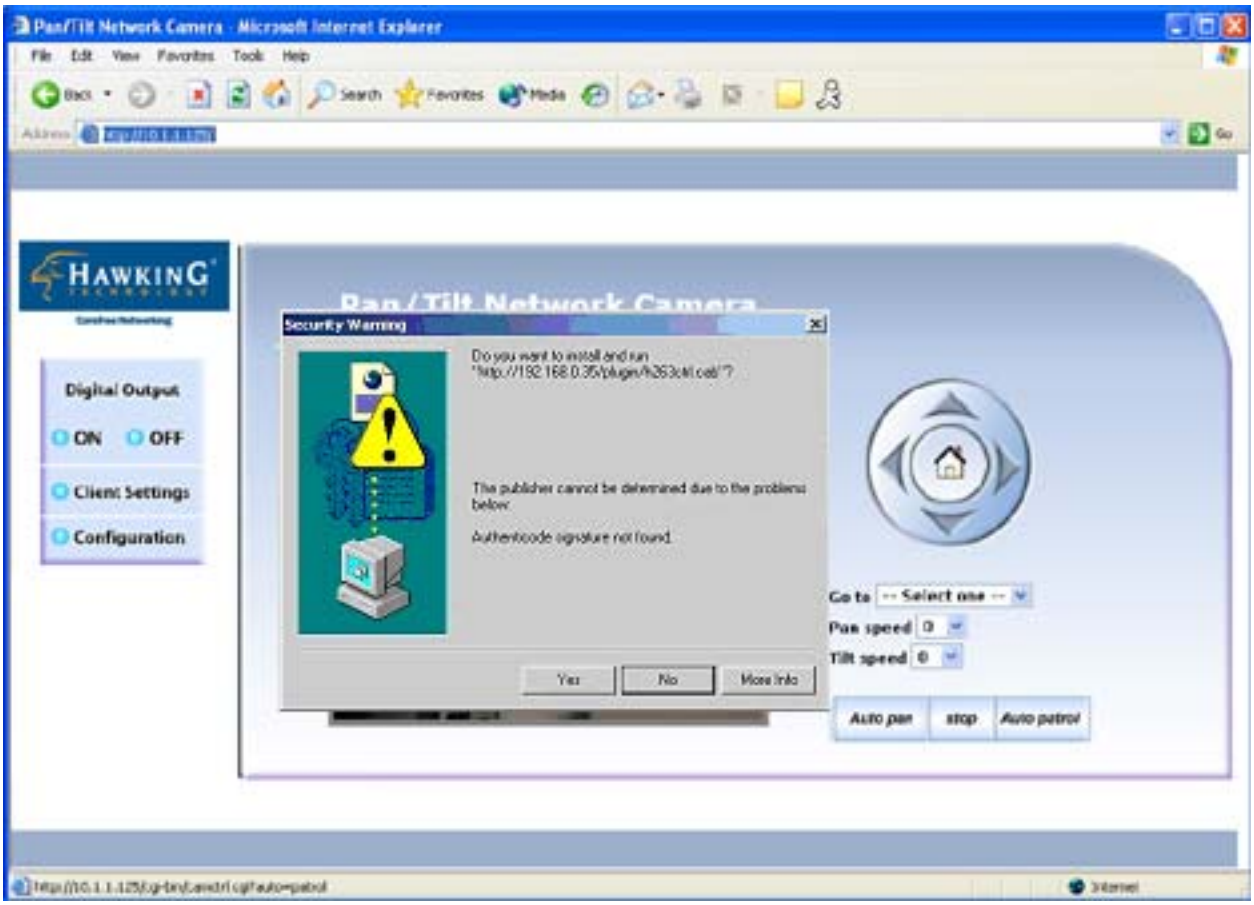
Installing the Plug-in

In Windows, during the initial access to the network camera, the web browser may prompt you for permission to install a new plug-in for the network camera. Whether or not you are prompted to install the plug-in will depend on the Internet security settings of your PC or notebook. (At higher levels of security, the user may be prohibited from installing and executing any plug-ins, even safe ones). This plug-in has been registered for certification and is used to display the motion images in the browser. It is recommended that you proceed with the installation by clicking Yes. If the web browser does not allow you to install the plug-in, check the Internet security option to lower security levels, or contact your network supervisor.



How to Use This Camera

Net-Vision HNC700PT Remote-Motion CCD Network Camera

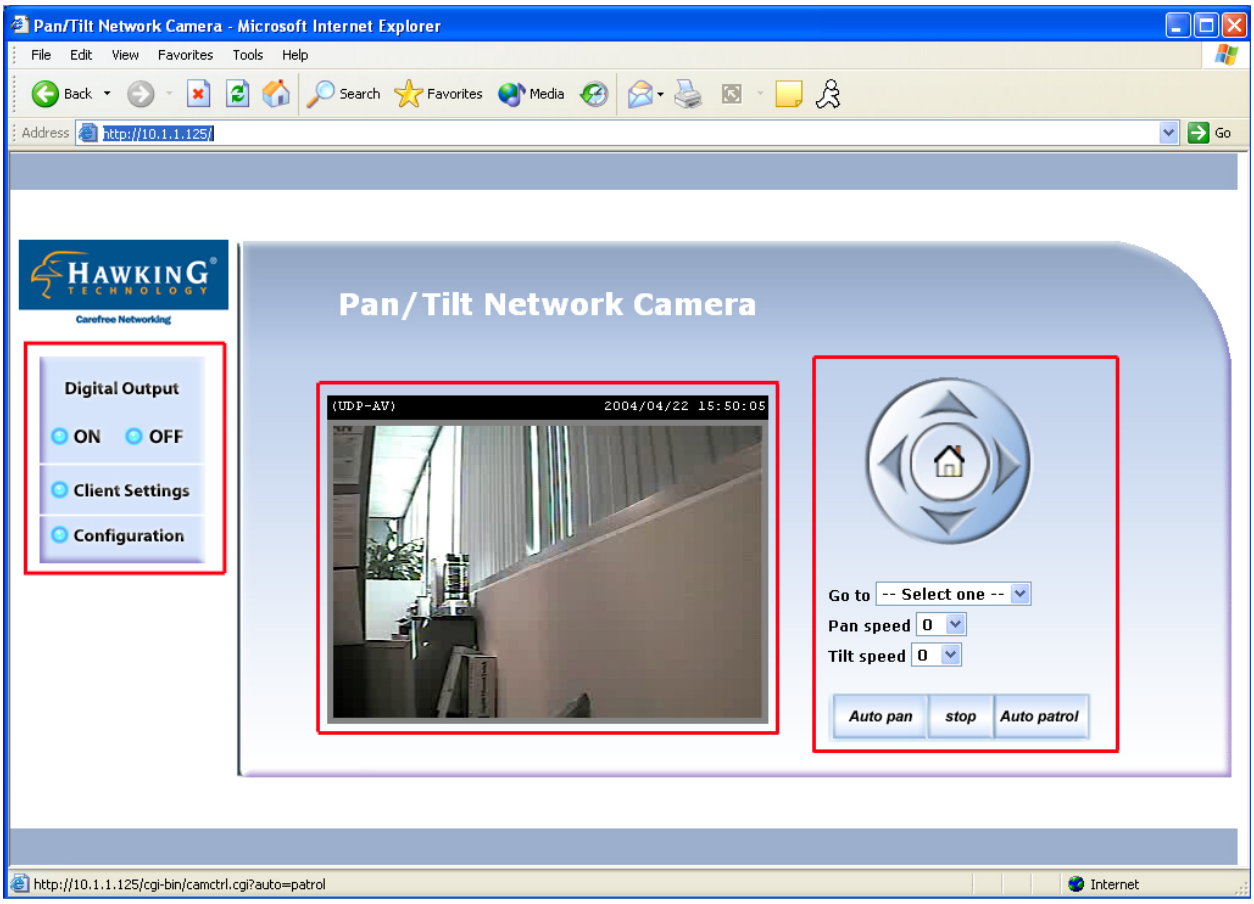
Primary User's Capabilities

Main Screen with Camera View

The main page layout has three parts:

- **Configuration functions**: The camera can be configured via the user interfaces that can be obtained by clicking on the buttons in the red box on the left-hand side of the figure below.
- **Camera View**: Displays what the camera sees (red box in the center of the figure below).
- **Pan/Tilt control buttons**: These buttons provide a command interface to control the aim/physical orientation of the camera.

Click on the configuration link (red box on the left-hand side of the figure below) to enter the configuration page.



Configuration Controls

Digital Output
Click on the "On" or "Off" buttons to enable or disable the digital output.

Client Settings
Clicking on this button links you to the client setting pages. Please review the section that follows for more details.

Configuration
Only the Administrator can access camera configurations.

Camera View

The information bar at the top of the camera view displays: a. the type of connection to the network camera, and b. the current date/time. The camera view provides not only the live video, but also a way to direct the network camera to different targets. You can use your mouse to click on the directional buttons and direct the network camera to various targets.

Pan/Tilt Control Buttons

The directional buttons are for Left, Right, Up, Down, and Home. The Home button centers the camera.

Go to
Once the Administrator has determined the preset positions, users can direct the camera using this control.

Pan speed
This button sets the speed of the "Left" and "Right" controls.

Tilt speed
This button sets the speed of the "Up" and "Down" controls.

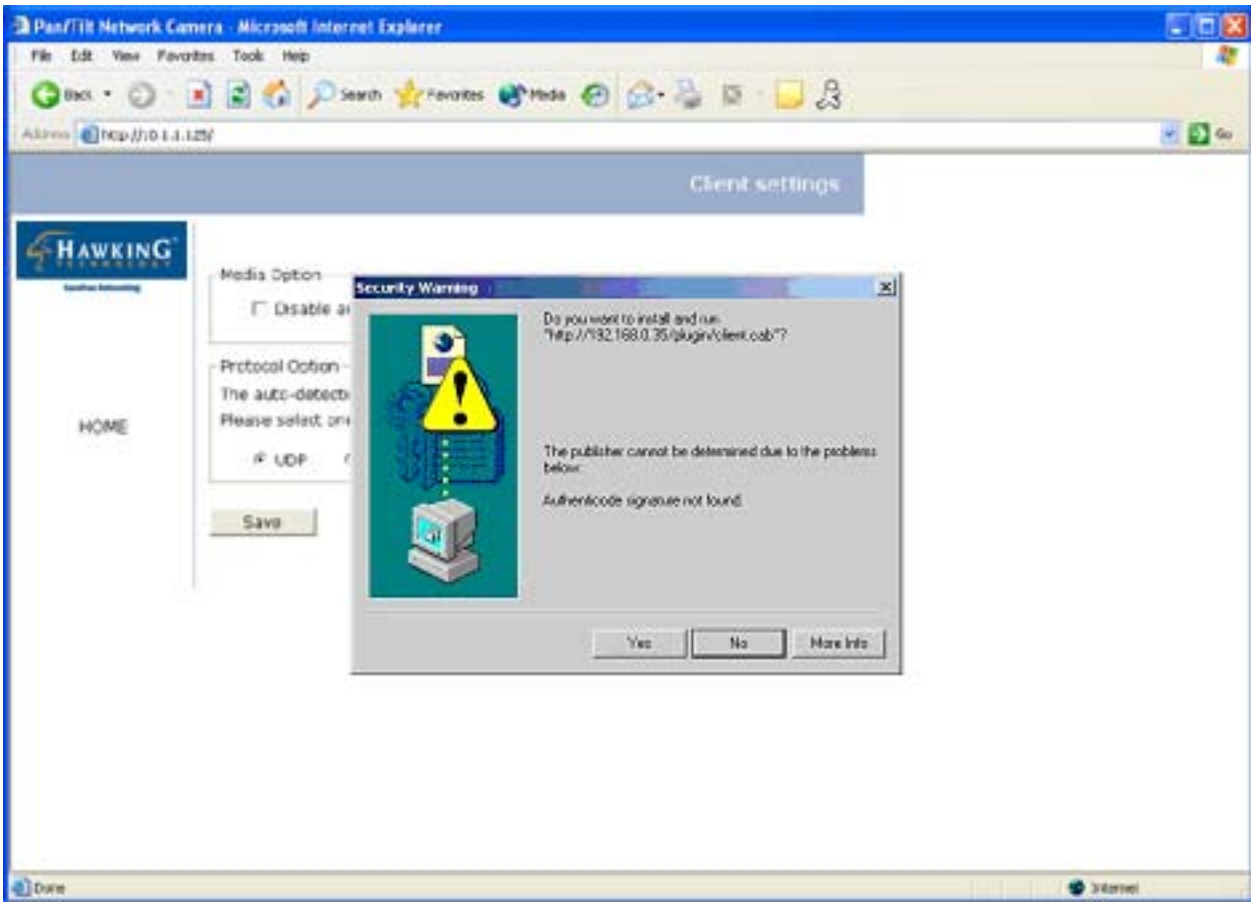
Auto pan
This button commands the camera to automatically pan from the current position to the left-most and then to the right-most positions. After panning, the camera returns to the original position.

Auto patrol
This button commands the camera to automatically patrol between the preset positions on the Patrol List, which can be modified on the "Camera control page". After one patrol cycle, the camera returns to the original position.

Stop
This stops the "Auto Pan" or "Auto Patrol" command.

Client Settings

At the initial access to the "Connection type" page in Windows, the web browser will ask for a new plug-in installation. This plug-in has been registered for certification and can be used to change the parameters at the client's site. The user should click on Yes to install the plug-in. If the web browser does not allow the user to complete the installation, check the Internet security to lower the security level or contact your IT or networking supervisor.

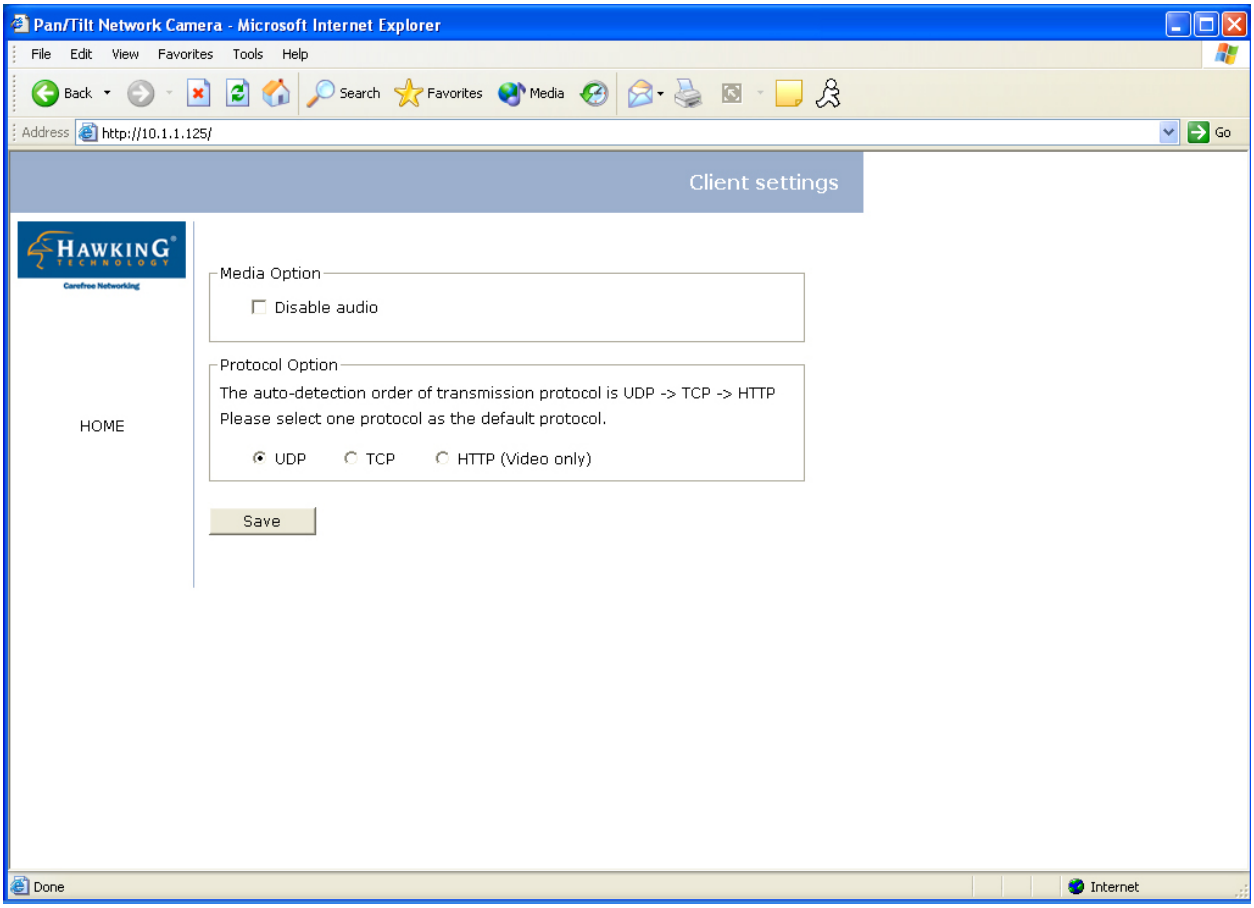


There are two settings within the Client Settings page. One is the "Media Option" for the User to determine if audio should be muted. The other is the "Protocol Option", which provides choices on connection protocol between client and server. There are three protocol choices to optimize your usage: UDP, TCP and HTTP.

The **UDP** protocol allows for more real-time audio and video streams. However, some packets may be lost due to network burst traffic and images may be obscured.

The **TCP** protocol allows for less packet loss and produces a more accurate video display. The downside with this protocol is that the real-time effect is worse than that of the UDP protocol.

The **HTTP** protocol must be selected if the network is protected by a firewall and it only allows HTTP Port (80) to be opened. In this mode, audio will not be sent and only video is operational. If there are no special requirements, the UDP protocol is recommended. Generally speaking, the client's preference should be in the following order: UDP → TCP → HTTP. After the network camera is connected successfully, the "Protocol Option" will indicate the selected protocol. The selected protocol will be recorded in the user's PC and will be used for the next connection. If the network environment is changed, or the user wants to let the web browser detect again, manually select the UDP protocol, save, and click HOME to re-connect.



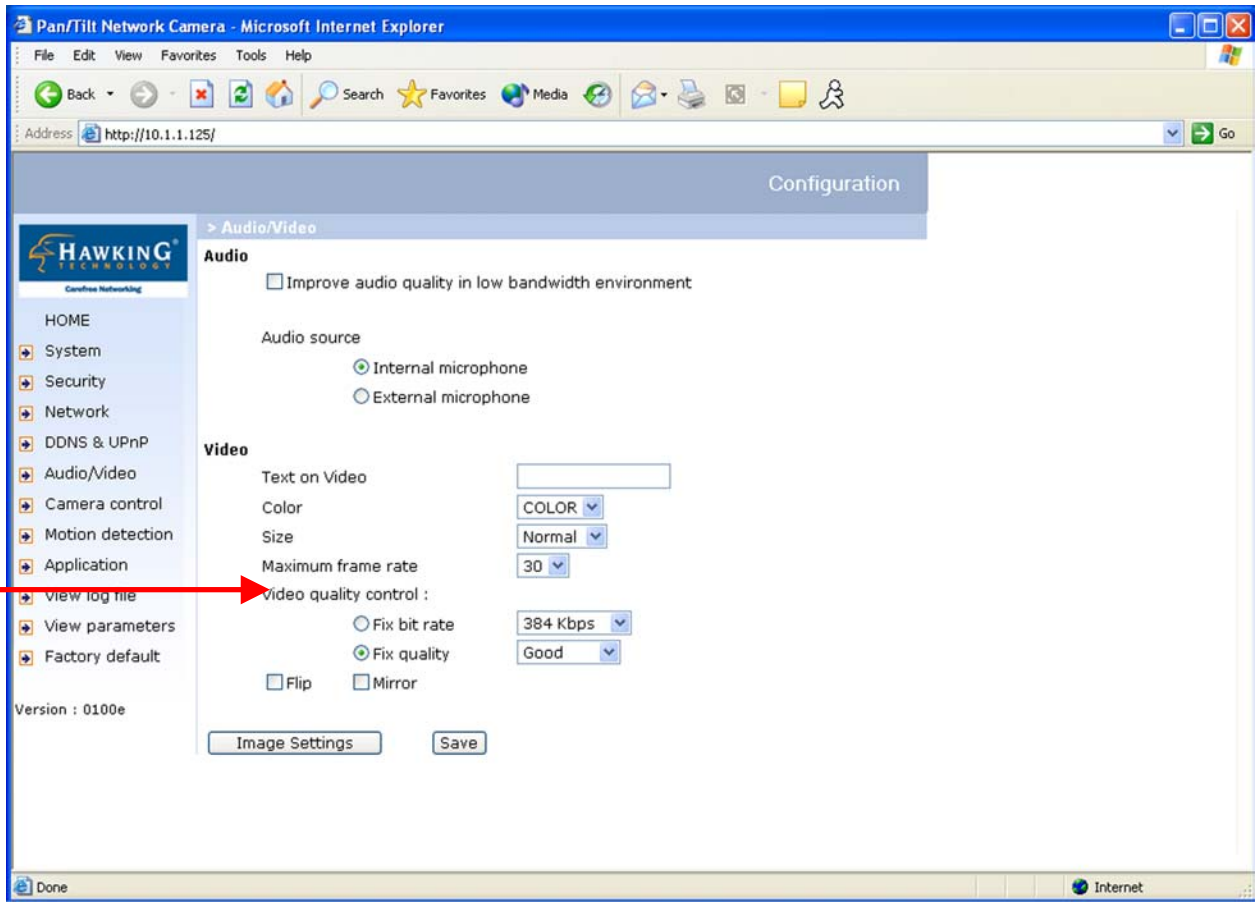
URL: *http://<Network Camera>/protocol.html*

<Network Camera> is the domain name or the original ***IP address*** of the network camera.

Administrator's Capabilities

Configure for Optimal Performance

Optimal performance means obtaining the fastest image refresh rate and highest video quality, while utilizing the lowest possible network bandwidth. Three factors in the "Video" configuration page will control the performance:
a. Maximum frame rate, b. Fixed bit rate, and c. Fixed quality.



For Best Real-time Video Images

To achieve a good real-time visual effect, the network bandwidth should be large enough to allow a transmission rate of greater than 20 image frames per second. If the broadband network is over 1 Mbps, set the "Fix bit rate" to 1000Kbps or 1200Kbps, and set "Fix quality" at the highest quality. The maximum frame rate is 25 in the PAL system and 30 in the NTSC system. (The PAL standard is used in Europe and China, and in parts of Africa, South America, and the Middle East. The NTSC standard is used in the U.S., Canada, Japan, South Korea, and in parts of Central and South America.) If your network bandwidth is more than 384Kbps, you can fix the bit rate according to your bandwidth and set the maximum

frame rate to 25 fps or 30 fps. If you are shooting fast-moving images, you may want to slow the maximum frame rate down to 20 fps in order to lower the rate of data transmission. This allows for better video quality and the human eye cannot easily detect the differences between those of 20, 25, or 30 frames per second. If your network bandwidth is below 384 Kbps, set the "Fix bit rate" according to your bandwidth and try to get the best performance by fine-tuning the "Maximum frame rate". In a slow network, greater frame rate results in blurred images. Another work-around is to choose "Half" in the "Size" option for better images, or "Halfx2" for a larger image view. Video quality performance will vary somewhat due to the number of users viewing on the network, even when the parameters have initially been finely tuned. Performance will also suffer due to poor connectivity as a result of the network's burst constraint.

For Best Quality Images

For the best video quality, you should set "Fix quality" at "Detailed" or "Excellent" and adjust the "Maximum frame rate" to match your network's bandwidth. If your network is slow and you receive "broken" pictures, go to the TCP protocol in "Connection type" and choose a more appropriate mode of transmission. The images may suffer a time delay due to a slower connection. The delay will also increase as the number of users increases.

Compromise Between Real-time and Clear Images

If you have a broadband network, set "Fix quality" at "Normal" or better, rather than setting "Fix bit rate". You can also fix the bandwidth according to your actual network speed and adjust the frame rate. Start from 30 fps down for best results but not below 15 fps. If the image quality does not improve, select a lower bandwidth setting.

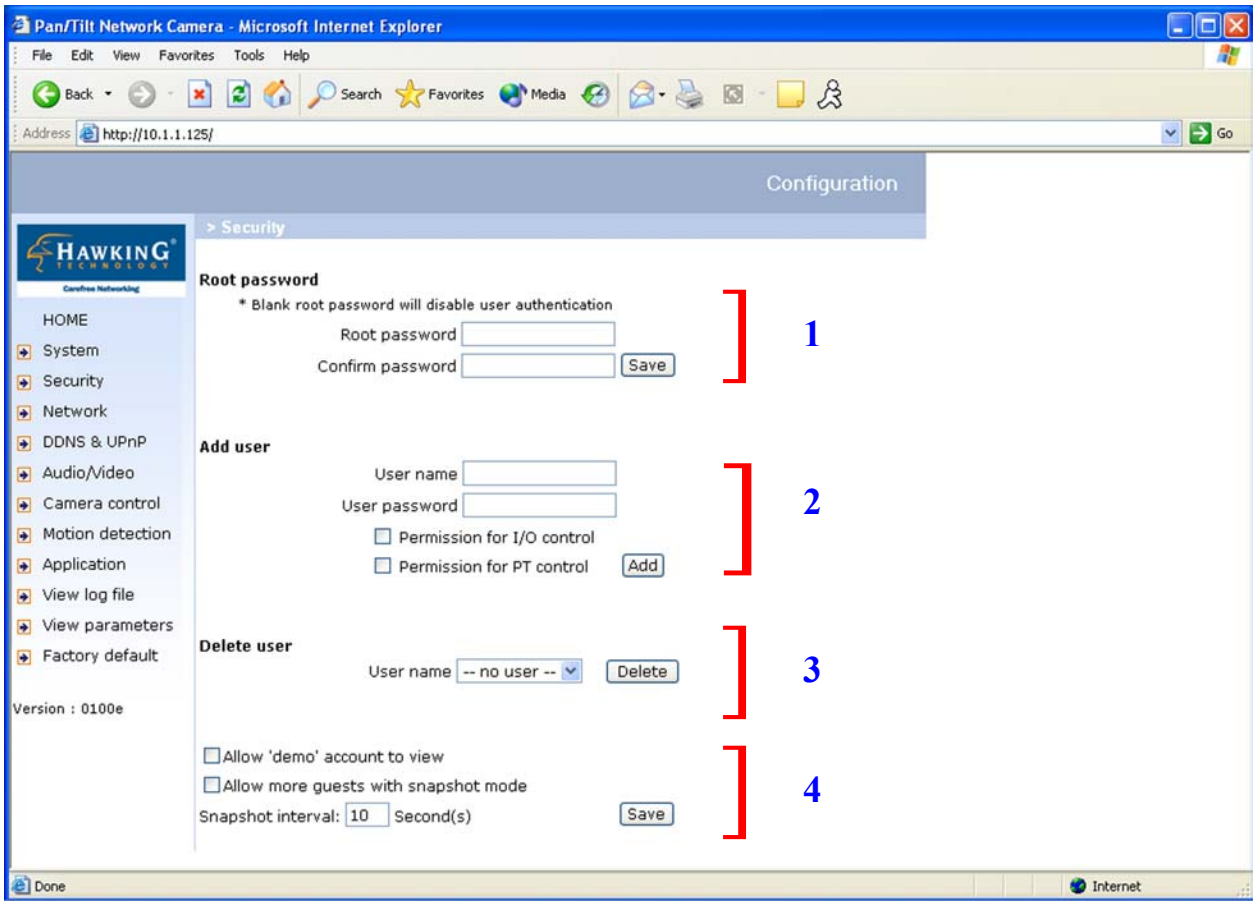
Opening Accounts for New Users

Protect the Network Camera Using Passwords

The network camera initially has no default password (i.e., it is blank). This means that initially anyone can access the network camera (including the configuration section) as long as the IP address is known. It is necessary to assign a password if other users will need to have access to the network camera. Type a new word twice in (**1**) to enable protection. This password is used to identify the administrator. Then add an account with user name and password for other users in (**2**). The network camera can provide twenty accounts for your additional users. Each account identifies the access right rather than the actual visitor. This allows multiple visitors to share the same account. An option to access DI/DO is provided for each account. Some users may need to be prohibited from controlling your attached devices. Another option allows different controls for the pan/tilt functions of the Network Camera. You may choose to delete users in (**3**).

More flexible options for viewers **(4)**

The first option allows anyone who uses "demo" as the user name to view without a password. The Administrator can also decide if more viewers are allowed to watch the video if the number of viewers exceeds the limit. The extra viewers will have snapshot mode instead.



Building a Multimedia Web Attraction Site

Demo on multiple sites – mid-scale service

The network camera can allow for ten visitors to view it online simultaneously. After installation, focus the network camera on any object you choose, and tell the visitors to type in the IP address. Caution: You may want to maintain your visitor's list in the "Security" configuration page to block out unexpected visitors.

Product demo for e-business – Large-scale Service

If the number of visitors has exceeded the limit, the Network Camera can allow the extra viewers to see snapshots in JPEG mode on the homepage. They will be still images and will be refreshed periodically and automatically. (It needs a script function supported by the web browser.) For this type of application, see (**4**) in the figure above.

How to Use This Camera

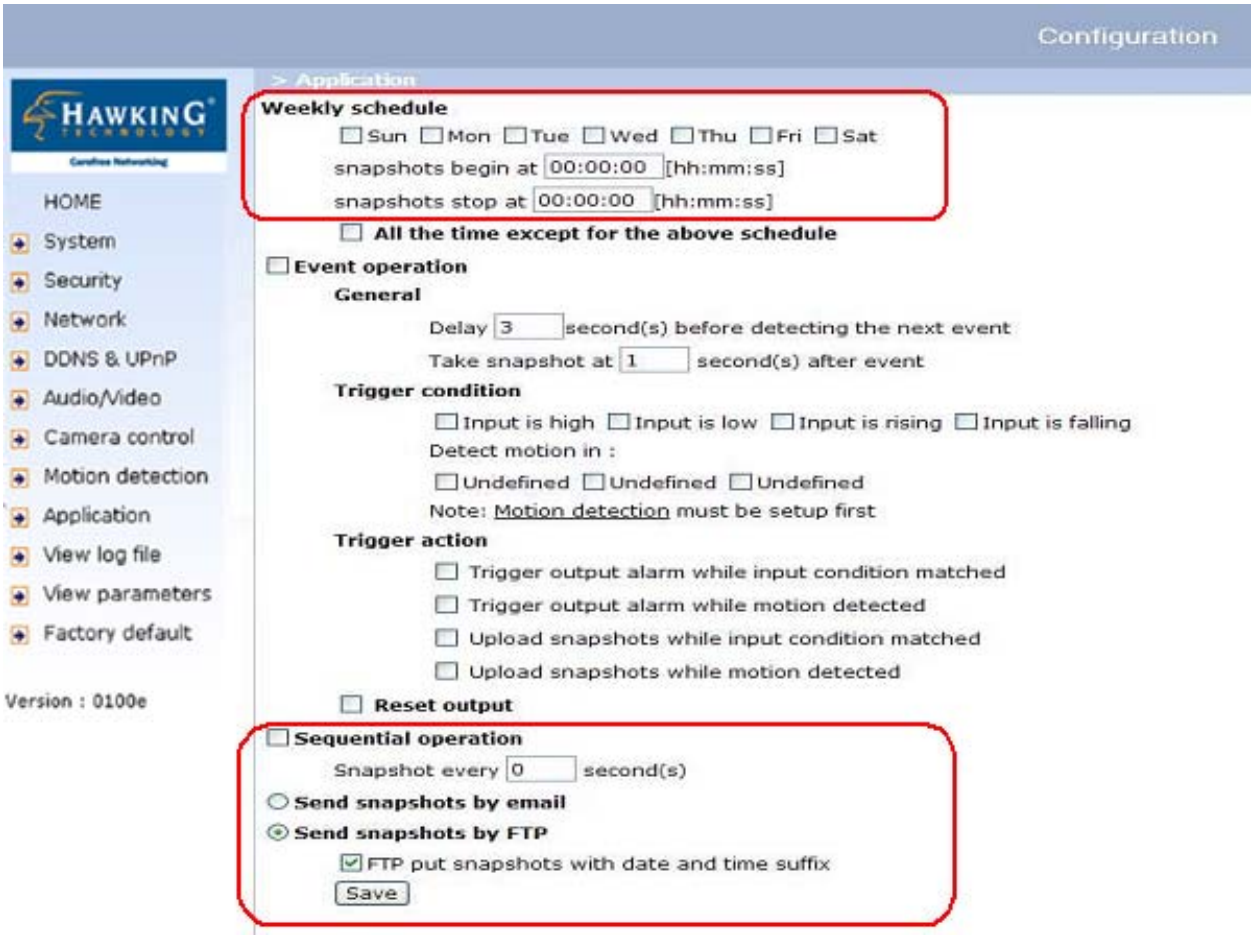
Net-Vision HNC700PT Remote-Motion CCD Network Camera

1. Click on “Configuration” on the homepage.
2. Click on “Security” in the left column.
3. Go to the bottom of the page and check “Allow more viewers with snapshot mode”.
4. Set the snapshot interval to refresh the still image automatically. The longer the snapshot interval, the better the snapshot mode works for multiple viewers.

If you want to expand to allow more viewers, the host server should be able to handle large network traffic, which, in turn, must handle the picture refreshing from the network camera.

If the web server space has FTP service, set the network camera up as an FTP client to upload the pictures. The access to the network camera will be independent of the number of viewers and the picture quality will remain constant.

1. Click on “Configuration” on the homepage.
2. Click on “Network” in the left column.
3. Fill in the FTP related settings including: server, user name and password, as well as the upload path if it is specified by the web space.
4. Click on ”Save” and wait for the system to restart.
5. Click on “Application” in the left column.



6. Select the day or days of the week in the “Weekly schedule” that you want to upload the pictures.
7. Select “Sequential operation” and set the interval.
8. Unselect "FTP put snapshots with date and time suffix" as the upload method and click on "Save".
9. The image file uploaded to the web space is named “video.jpg”. Check if the file is successfully uploaded to the correct folder.
10. Prepare a homepage with the embedded image reference to the image file uploaded via FTP in advance.

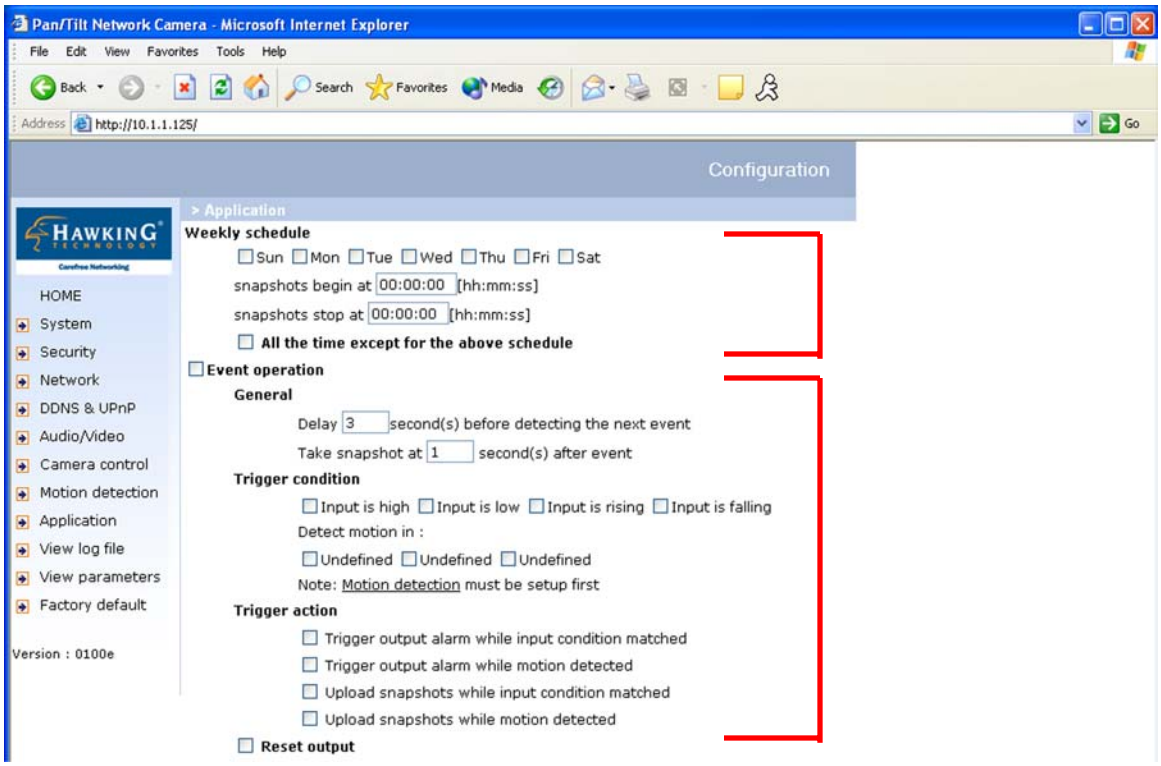
If the web space has no FTP service, an auto-refresh homepage can be used to periodically poll the newest image from the network camera. It is most efficient if using a free web space provider, as the FTP service may be limiting.

Prepare an auto-refresh homepage according to the following example:

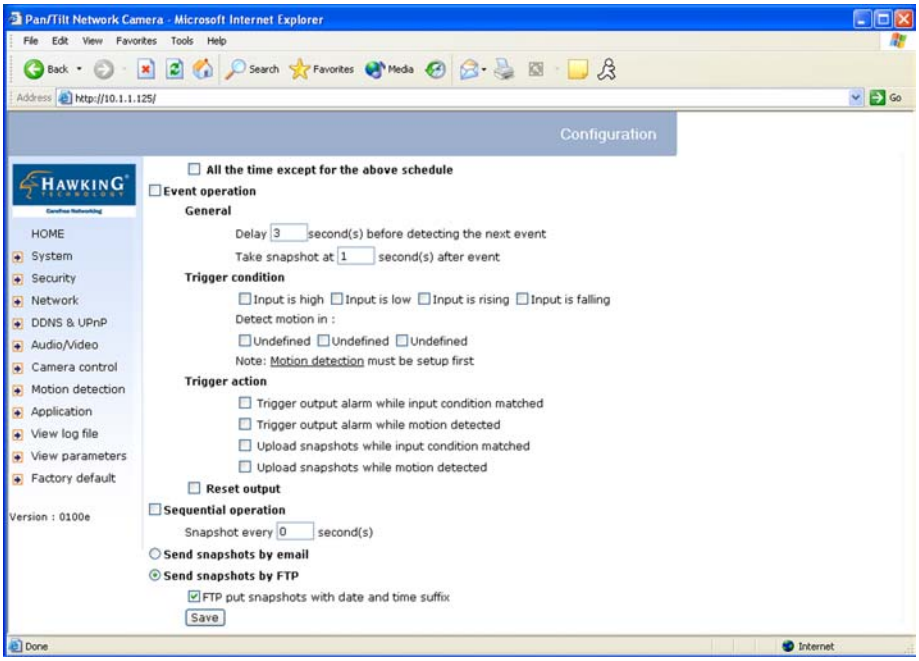
The URL of the image is http://“IP address of the Network Camera”/cgi-bin/video.jpg. Set the IP address according to your network camera. Define the refresh interval according to your network bandwidth for best results. If the refresh rate is too fast and there are a large number of visitors, this may overload the network camera and slows the response.

Building a Security Application

The Administrator can combine options on the application page to perform many useful security applications. There are two trigger sources coming from attached devices, such as for motion detection. There are also two kinds of actions responding to such events, including uploading snapshots over the Internet and driving other attached devices. To upload the snapshots, the User can choose either email or FTP according to user’s needs. Both e-mail and FTP use the network settings on the network page. Refer to the definition section for detail configuration.



1. Click on “Configuration” on the homepage.
2. Click on “Application” in the left column.
3. Check the weekdays as desired and give the period from "Snapshots begin" to "Snapshots end" to monitor the triggering conditions every day.
4. Check the “Event operation” box. The triggering condition can be set to detected motion or the status of the attached device.
5. Set the delay before detecting the next event to avoid continuous false alarms following the original event.
6. Set the delay to take snapshots after the event to capture the direction of the moving objects.

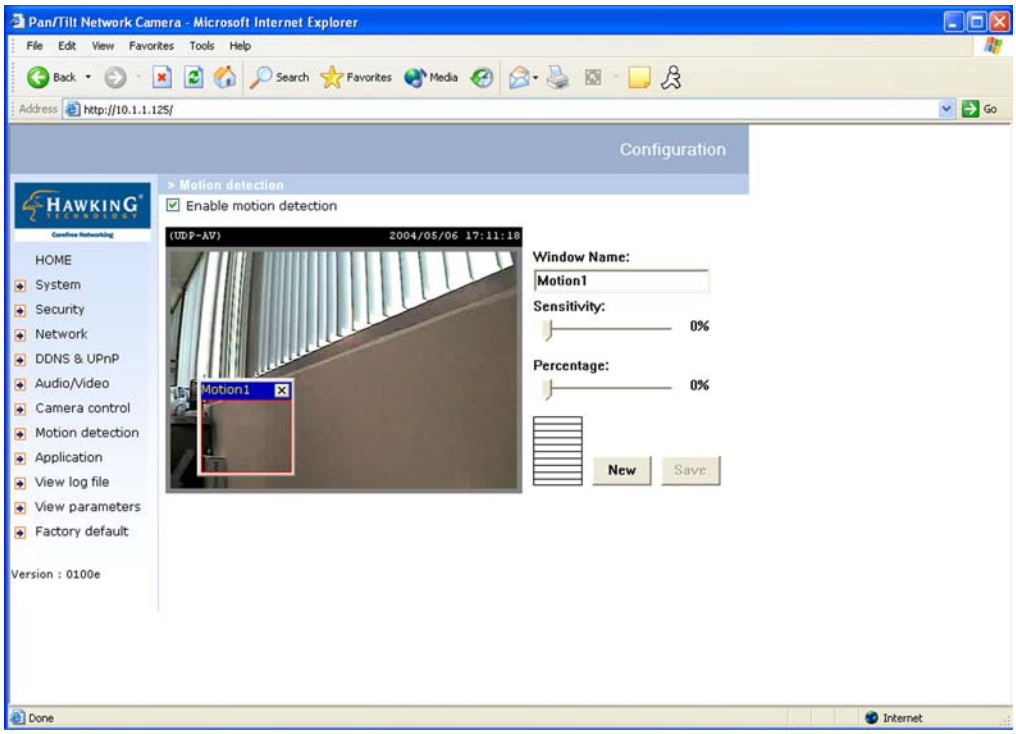


Send snapshots when motion is detected

If no external sensor is available, the Administrator can use the built-in motion detection to monitor any movement and send snapshots via email for security check.

7. Click on “Motion detection” in the left column.
8. Check the “Enable motion detection” box at the top.
9. Click on “New” to have a new motion detection window to monitor video.
10. Type in a name to identify the new window.
11. Use the mouse to click, hold, and drag the window corner to resize it, or the do the same to the title bar to move the window.
12. Fine-tune using the “Sensitivity” and “Percentage” fields to best suit the camera’s environment. Higher ”Sensitivity” will help to detect even the slightest amount of motion. Higher “Percentage” discriminates smaller objects. In other words, the higher the ***sensitivity***, the more easily motion will be detected. The higher the ***percentage***, the more difficult it will be to detect small moving objects. (Therefore, by increasing the percentage, you will be able to exclude minor, unnecessary motions, if desired.)

13. Clicking on "Save" enables the activity display (the lined column to the left of the "New" button). Green means the motion in the window is under the watermark (threshold) set by the Administrator and red means it is over the watermark (threshold).
14. Click on "Application" in the left column.
15. Check the motion detection window name you set in Step 10 in the "Trigger Condition" section.
16. Check "Upload snapshots while motion detected" if you prefer to upload the snapshots.
17. Check "Send snapshots by email" or "Send snapshots by FTP".
18. Click on "Save" to validate.



Software Revision Upgrade

Customers can obtain the most up-to-date software from the Hawking Technologies website (www.hawkingtech.com) or by calling Hawking Technologies Technical Support. An easy-to-use Upgrade Wizard is provided to upgrade the network camera with just a few clicks. The upgrade function is open to the Administrator only. To upgrade the system, follow the steps outlined below:

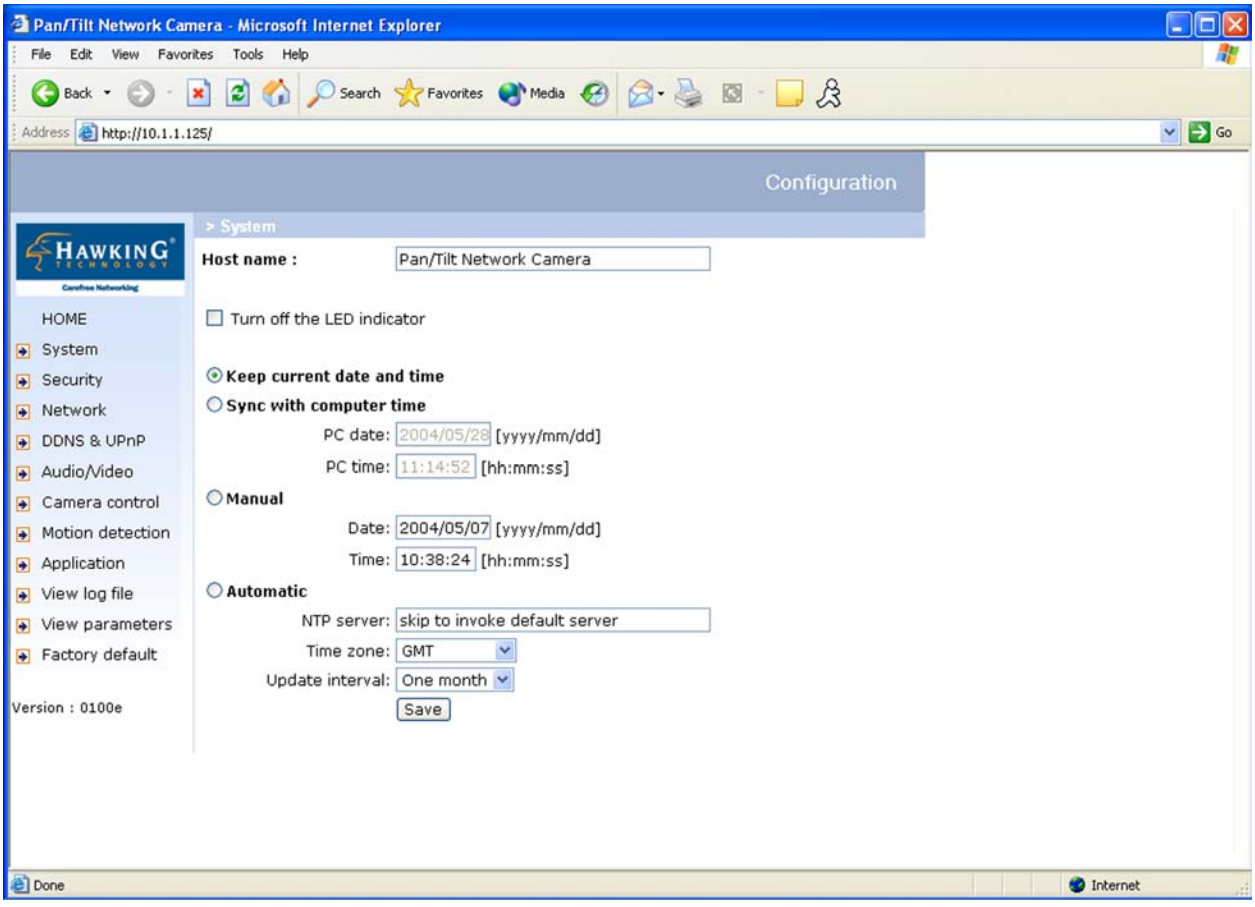
1. Download the firmware file named "FLASH.BIN" from the appropriate product folder.
2. Run the Upgrade Wizard and proceed, following the prompts. Refer to the instructions for the Upgrade Wizard for details.
3. The whole process will finish in a few minutes and it will automatically restart the system.

If power is disconnected or fails during the Flash memory writing process, the program in the network camera's memory may be destroyed permanently. If the camera cannot restart properly, ask your dealer for technical support.

Definitions in Configuration

Only the Administrator can access system configuration. Each category in the left column will be explained in the following pages. The bold texts are the specific words/phrases on the Option pages. The Administrator may type the URL below the figure to directly enter the frame page for configuration. To set certain options through the URL, read the reference appendix for details.

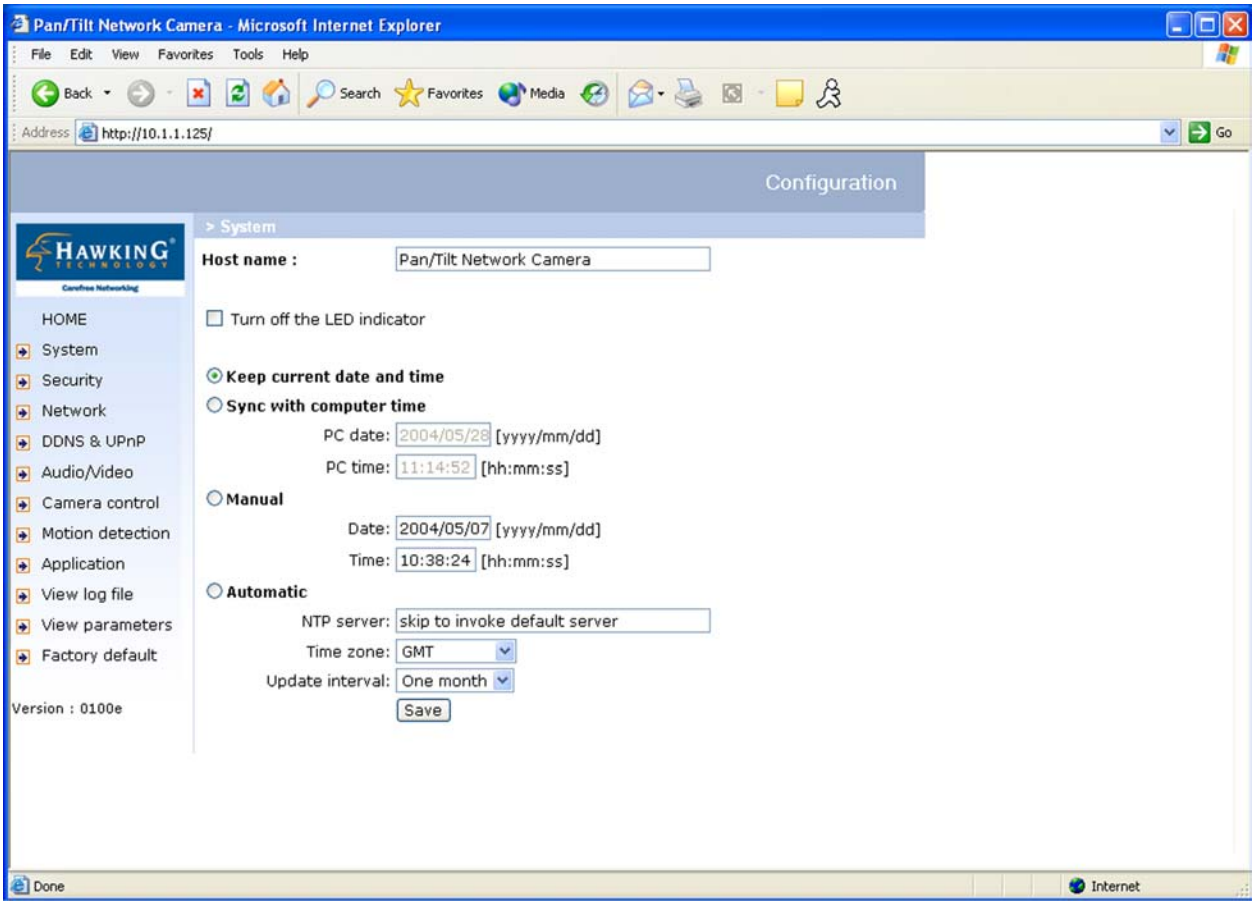
URL: *http://<Network Camera>/setup/config.html*
<Network Camera> is the domain name or original IP address of the Network Camera.



System Parameters

Host name: The text displays the title at the top of the main page.
Turn off the LED indicator: Check this option to shut off the LEDs. This can prevent the camera from being noticed.
Keep current date and time: Click on this to keep the network camera's current date and time. An internal real-time clock maintains the date and time even when the power of the system is turned off.
Sync with computer time: Synchronizes the network camera's date and time with the local computer. The read-only date and time of the PC is displayed as updated.
Manual: Adjust the date and time according to what is entered by the Administrator. Notice the format in the related fields while doing the entry.
Automatic: Synchronize with the NTP server over the Internet whenever the Network Camera starts up. It will fail if the assigned time-server cannot be reached.
NTP server: Assign the IP address or domain name of the time-server. Leaving the text box blank connects the network camera to the default time-servers.
Time zone: Adjust the time with that of the time-servers for local settings.
Update interval: Select hourly, daily, weekly, or monthly updates with the time on the NTP server.

Remember to click on Save to immediately validate the changes. Otherwise, the correct time will not be synchronized.

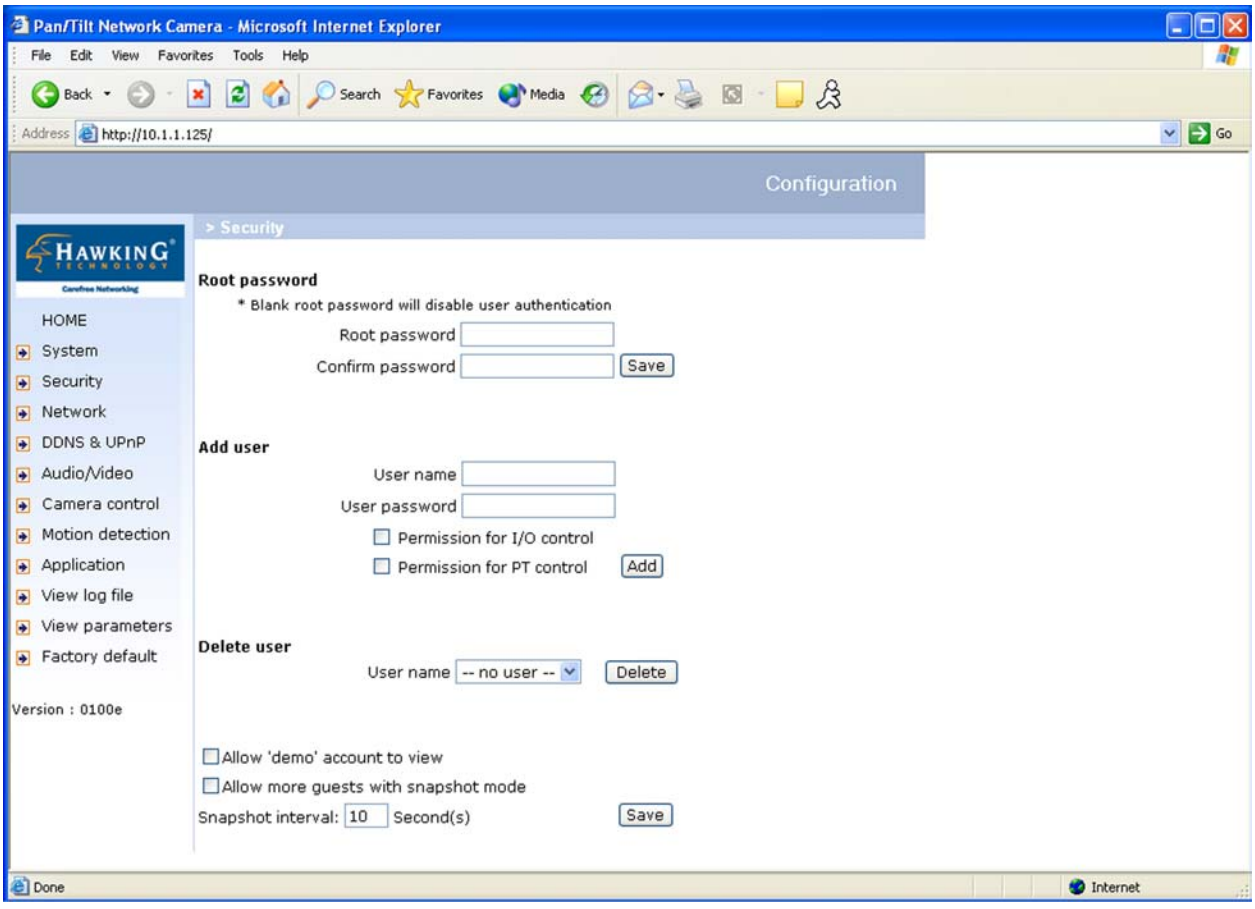


User Group Administration

Root password: Change the Administrator's password by typing in the new password identically in both text boxes. The typed entries will be displayed as asterisks for security purposes. After clicking Save, the web browser will ask the Administrator for the new password for access.

Add user: Type the new user's name and password and press Add to insert the new entry. The new user will be displayed in the user name list. There is a maximum of twenty user accounts. Each user can be granted privilege to "**Permit for I/O control**" and "**Permit for PT control**".

Delete user: Pull down the user list to find the user's name and press Delete to complete.
Permit for I/O control: Allows user to control the DO and get status of the DI.
Permit for PT control: Allows user to utilize the network camera's pan and tilt controls.
Allow 'demo' account to view: Check this to permit anyone who types in "demo" as user name. No password is needed for the demo account. Note that a demo account is restricted to viewing only.
Allow more viewers with snapshot mode: Only 10 users can view the camera simultaneously at any given time. This option allows for any additional viewers to see only still images. These still images are automatically refreshed by the interval defined below. This feature must be supported by the java script capability of the web browsers.
Snapshot interval: Defines the refresh rate of the still image in the homepage seen by the additional viewers.



Network settings

Any changes made on this page will restart the system in order to validate the changes. Make sure every field is entered correctly before clicking on Save.

Reset IP address at next boot: The default status is checked to avoid erroneous entries during installation. Having to perform software installation whenever the network camera starts can be tedious. Therefore, once the network settings have been entered correctly (especially the IP address), uncheck this option. If this option is disabled, the network camera will skip installation at the next boot. The network camera can automatically restart and operate normally after a power outage. Users can run IP Setup to check the IP address assigned to the network camera if the IP address is forgotten, or they can use the UPnP function provided by the network camera (MS Windows XP provides the UPnP function at Network Neighborhood).

General

IP address: This is necessary for network identification.
Subnet mask: This is used to determine if the destination is in the same subnet. The default value is "255.255.255.0".
Default router: This is the gateway used to forward frames to destinations in a different subnet. Invalid router settings will cause transmissions to destinations in different subnets to fail.
Primary DNS: The primary domain name server that translates hostnames into IP addresses.
Secondary DNS: Secondary domain name server that backs up the Primary DNS.

SMTP

SMTP (mail) server 1: The domain name or IP address of the external email server.
Recipient email address 1: The email address of the recipients for snapshots or log files. Multiple recipients must be separated by semicolons (i.e., '**;**').
SMTP (mail) server 2: The domain name or IP address of another email server once the previous server is unreachable.
Recipient email address 2: The email addresses of the recipients for the backup server.
Return email address: The return email address used in the event that emails fail to be sent out.

FTP

Local FTP server port: This can be something other than the default Port 21. The user can change this to a value between 1 and 65535. After the change, the ***external FTP client program*** must change the server port of connection accordingly.
1st FTP server: The domain name or the IP address of the external FTP server. The corresponding user settings below must be correctly configured for remote access.
1st FTP user name: Assigned user name on the external FTP server.
1st FTP password: Assigned password on the external FTP server.
1st FTP remote folder: Assigned folder on the external FTP server. The string must conform to that of the external FTP server. Some FTP servers cannot accept preceding slash symbols before the path without virtual path mapping. Refer to the instructions for the external FTP server for details. The folder privilege must be open for upload.
Primary FTP passive mode: The network camera is located inside the network protected by a firewall; data connection for FTP may be prohibited. By selecting passive mode, the FTP can bypass the rule and allow snapshot upload to

proceed. If the passive mode is selected, the network camera can automatically make an attempt for active mode, if the external FTP server does not support passive mode.
2nd FTP server: The domain name or IP address of the external FTP server.
2nd FTP user name: Assigned user name on the backup FTP server.
2nd FTP password: Assigned password on the backup FTP server.
2nd FTP remote folder: Assigned folder on the backup FTP server.
Secondary FTP passive mode: Passive mode setting for the backup FTP server.

HTTP

HTTP port: This can be something other than the default Port 80. Once the port is changed, the User must be notified of the change for the connection to be successful. For instance, when the Administrator changes the HTTP port of the network camera whose IP address is 192.168.0.100 from 80 to 8080, the User must type in the web browser "http://192.168.0.100:8080" instead of "http://192.168.0.100".

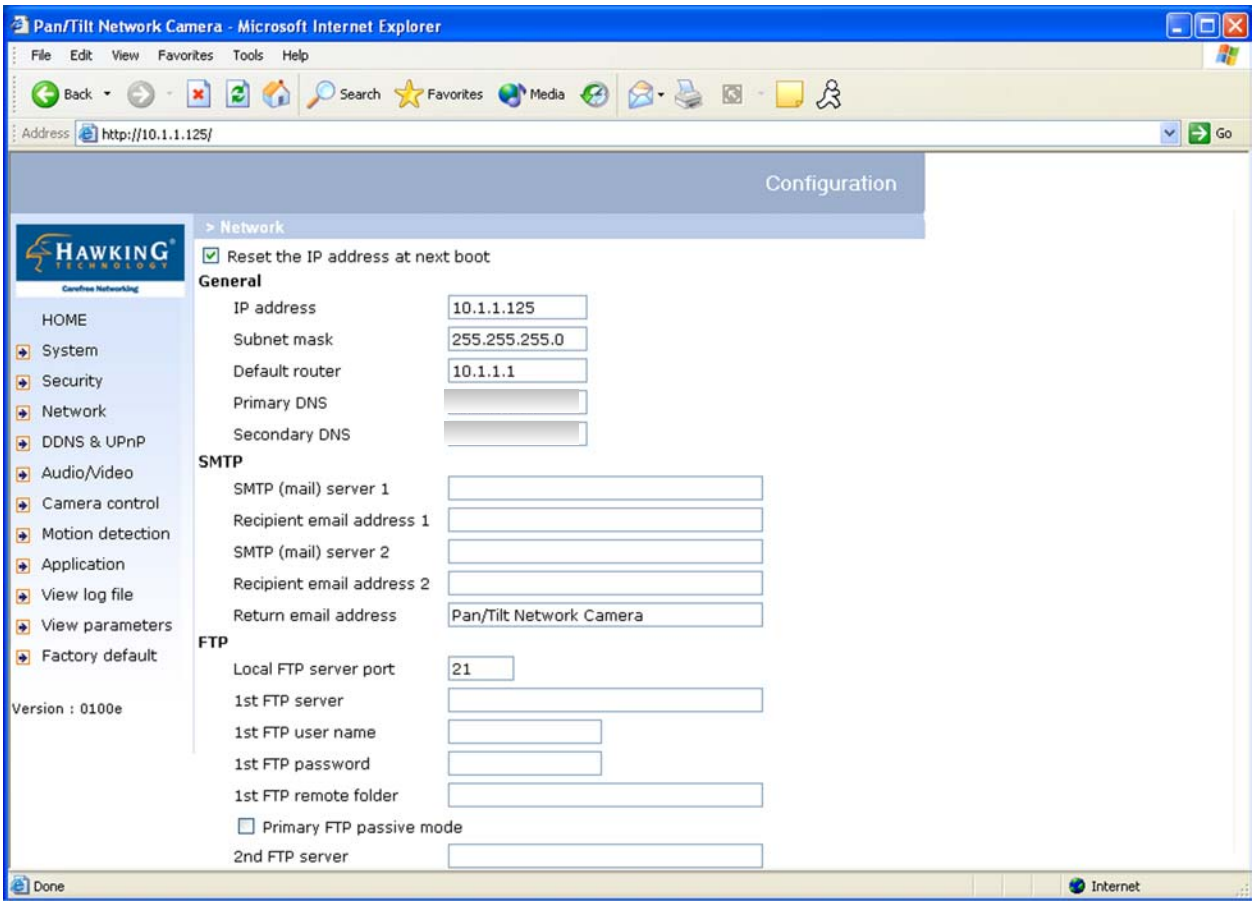
Streaming

Control channel port: This can be something other than the default port 5001 in order to work with the port opened by the firewall.
Audio channel port: This can be something other than the default port 5002 in order to work with the port opened by the firewall.
Video channel port: This can be something other than the default port 5003 in order to work with the port opened by the firewall.
Improve audio quality in low bandwidth environment: If the network camera seems to work in a low bandwidth network environment, the User can use this option to see if audio quality can be improved by sacrificing some real-time synchronization.

⚠ Some invalid settings may cause the system to fail to respond. Change the configuration only if necessary and consult with your network supervisor or experienced users for correct settings. If the system loses contact, refer to Appendix A for reset and restore procedures.

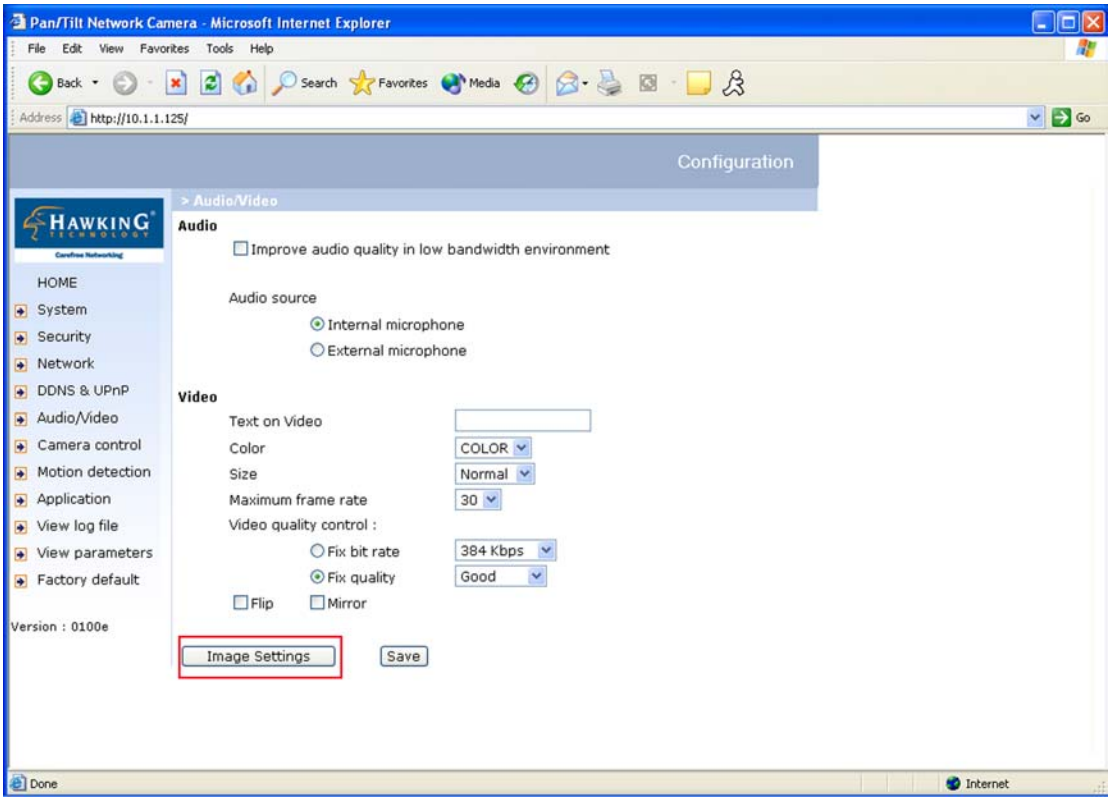
How to Use This Camera

Net-Vision HNC700PT Remote-Motion CCD Network Camera



Video Codec Parameters

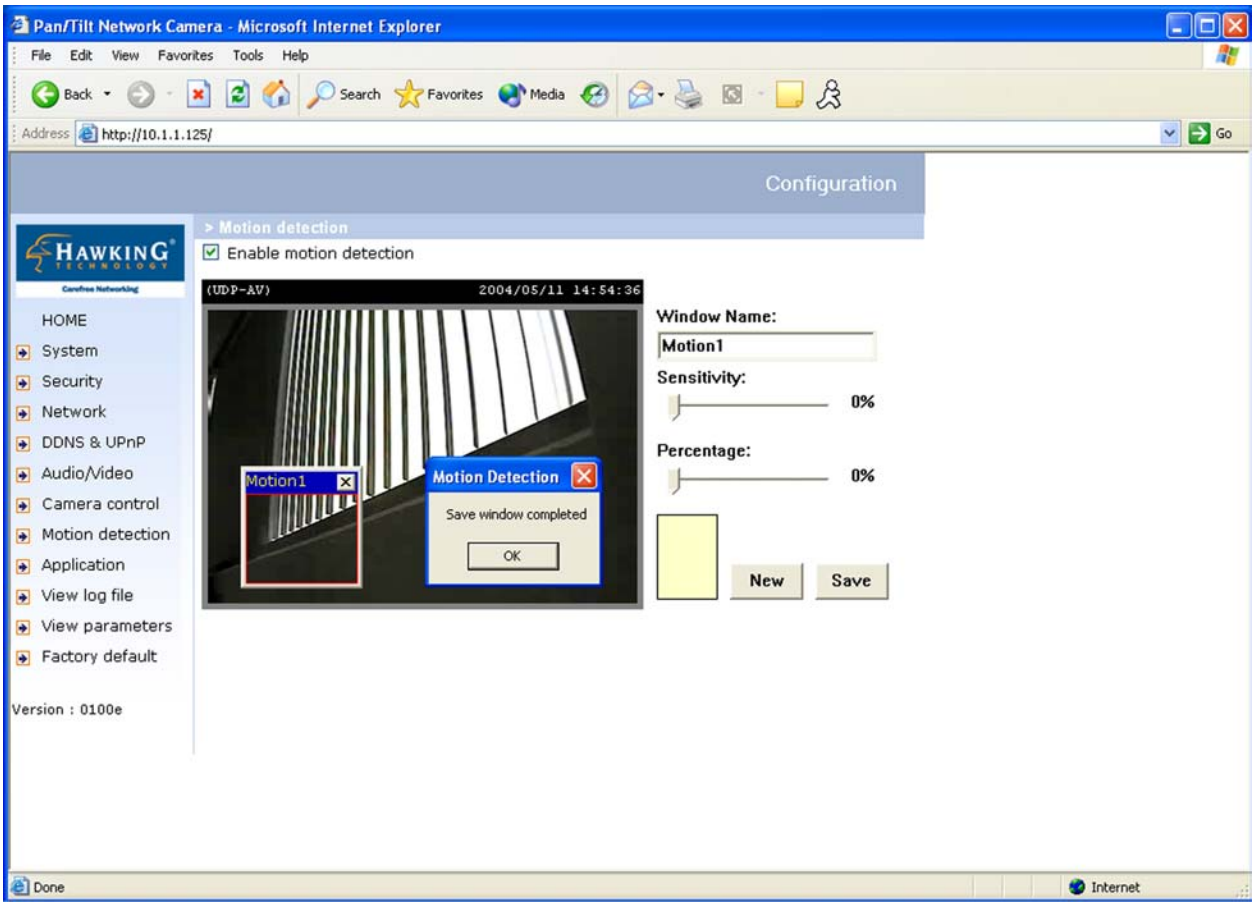
Text on video: The text will be displayed in the black bar above the video window with a timestamp. The timestamp is captured from the date and time of the network camera that is maintained by a built-in real-time clock.
Color: Select either for color or monochrome video display.
Size: There are three options for two video sizes. “Half” is the quarter size of “Normal”. “**Half x 2**” has the same video size as “Normal” but of a lesser quality, while consuming less network bandwidth.
Maximum frame rate: This limits the maximal refresh frame rate, which can be combined with the "**Video quality control**" to optimize bandwidth utilization and video quality. If the User wants to fix the bandwidth utilization regardless of the video quality, choose "**Fix bit rate**" and select the desired bandwidth. The video quality may be poor due to the sending of maximal frame rate within the limited bandwidth when images are moving rapidly. Consequently, to ensure detailed video quality (quantization rate) regardless of the network, it will utilize more bandwidth to send the maximal frames when images change drastically.
Flip: Vertically rotate the video.
Mirror: Horizontally rotate the video.
Check both options (Flip & Mirror) if the network camera is installed upside down.
White balance: Adjust the value for best color temperature.
Click on this Image Setting button; another window will appear that allows you to tune "Brightness", “Contrast”, “Hue” and "Saturation" for video compensation. Each field has eleven levels, ranging from -5 to +5. The User can click on preview to fine-tune the image. When the image is at a desired setting, press Save to set the image settings. Click on this restore to recall the original settings without incorporating the changes.



Motion Detection

Enable motion detection: Check this option to turn on motion detection.
Click on this New button to add a new window. At most, three windows can exist simultaneously. Use the mouse to click, hold, and drag the window frame to resize it, or the title bar to move it. Clicking on the 'x' at the upper right-hand corner of the window will delete the window. Remember to save in order to validate the changes.
Click on this Save button to save the related window settings. A graphic bar will rise or fall depending on the image's motion variations. A green bar means the image variation is under the monitoring level threshold and a red bar means the image variation is over the monitoring level threshold. When the bar goes red, the motion detection window will also be outlined in red. Going back to the homepage, the monitoring window is hidden, but the red frame will show when motion is detected.
Window Name: The text will show at the top of the window.
Sensitivity: This sets the allowable difference between two sequential images.
Percentage: This sets the space ratio of moving objects in the monitoring window.

A higher sensitivity and smaller percentage will allow easier motion detection. The following figure shows the screen when Save is clicked.



Application Setup

Weekly Schedule

Sun-Sat: Select the days of the week during which you would like to utilize the operations below.
Snapshots begin at: Set the time to start operations.
Snapshots stop at: Set the time to stop operations.
Setting identical begin and stop times means 24-hour operation.

Event operation

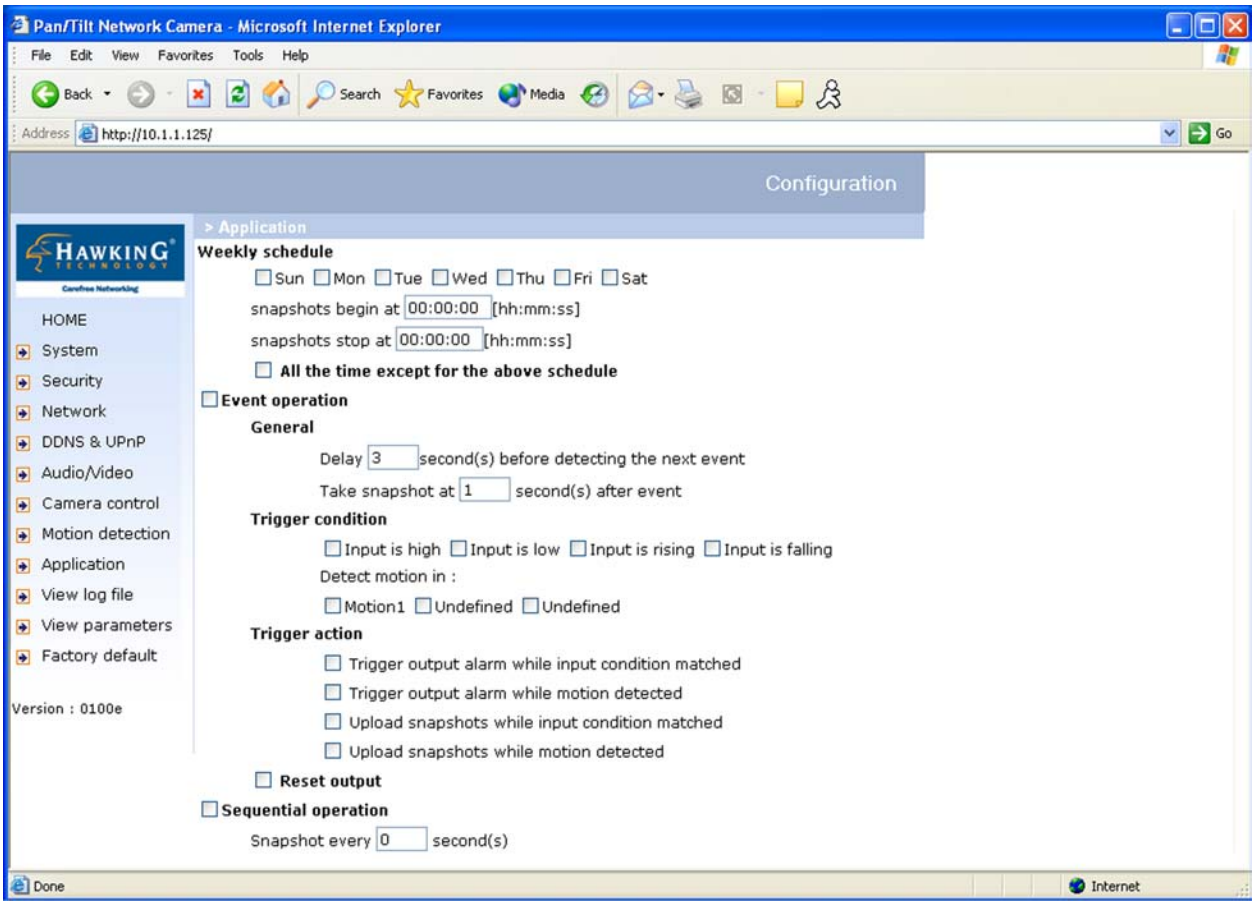
Delay _ second(s) before detecting next event: Set the time delay before restarting, to check on the triggering condition when the current condition is triggered.
Take snapshots at _ second(s) after event: After the camera has taken a snapshot when a condition is triggered, another snapshot will be taken after this configured interval, in seconds.
Trigger condition: There are four conditions relative to the digital input and the three windows for motion detection. More than one condition can be selected at once. Select the appropriate digital input condition that suits the characteristics of the external device. "high", "low" selects level-triggering via external voltage input. "rising", "falling" is for edge-triggering. There are three windows for motion detection and each can be assigned a name. If motion detection has not been set up, "**undefined**" will be shown instead of the window title. If this happens, click on "Motion detection" and a note will appear, directing the User to the configuration page for motion detection.
Trigger action: There are four options for two types of actions. More than one condition can be selected at once. If you choose to trigger an output alarm, the digital output will short both pins and complete the external device's circuit. The normal state is open. Either email or FTP can be used to command the uploading of snapshots. The snapshot names will be "vpre.jpg", "vtrg.jpg", and "vpos.jpg", respectively. They stand for the snapshots, before the event, right upon the event, and after the event. The date and time suffix may also be added as an option. Confirm the external mail or FTP server settings in the network configuration.
Reset output: Select and save this option to reset the external device at the digital output to return to the original state.

Sequential operation

Snapshot every _ second(s): The network camera will send snapshots at the specified intervals to the external server using the method selected below. Remember: This operation is still subject to the conditions set in the weekly schedule.
Send snapshots by email: This selects the uploading method following the intervals set above. The snapshot named "video.jpg" will be attached in the email with the subject title "Periodic snapshots".
Send snapshots by FTP: The snapshots will be uploaded to the external FTP server with the file name defined in the next option. This can also be used to refresh the captured images stored in the external web server to build creative homepages.
FTP put snapshots with date and time suffix: This option sets up the snapshot capture date and time, which can be used to easily differentiate the snapshot file names in either sequentially or by event operation. For instance, "video@20040102030405.jpg" means the JPEG image was captured in the year 2004, January the 2nd, at 3 o'clock, 4 minutes, and 5 seconds. If this suffix is omitted, the file named "video.jpg" on the external FTP server will be refreshed at the specified interval.

How to Use This Camera

Net-Vision HNC700PT Remote-Motion CCD Network Camera



Camera Control

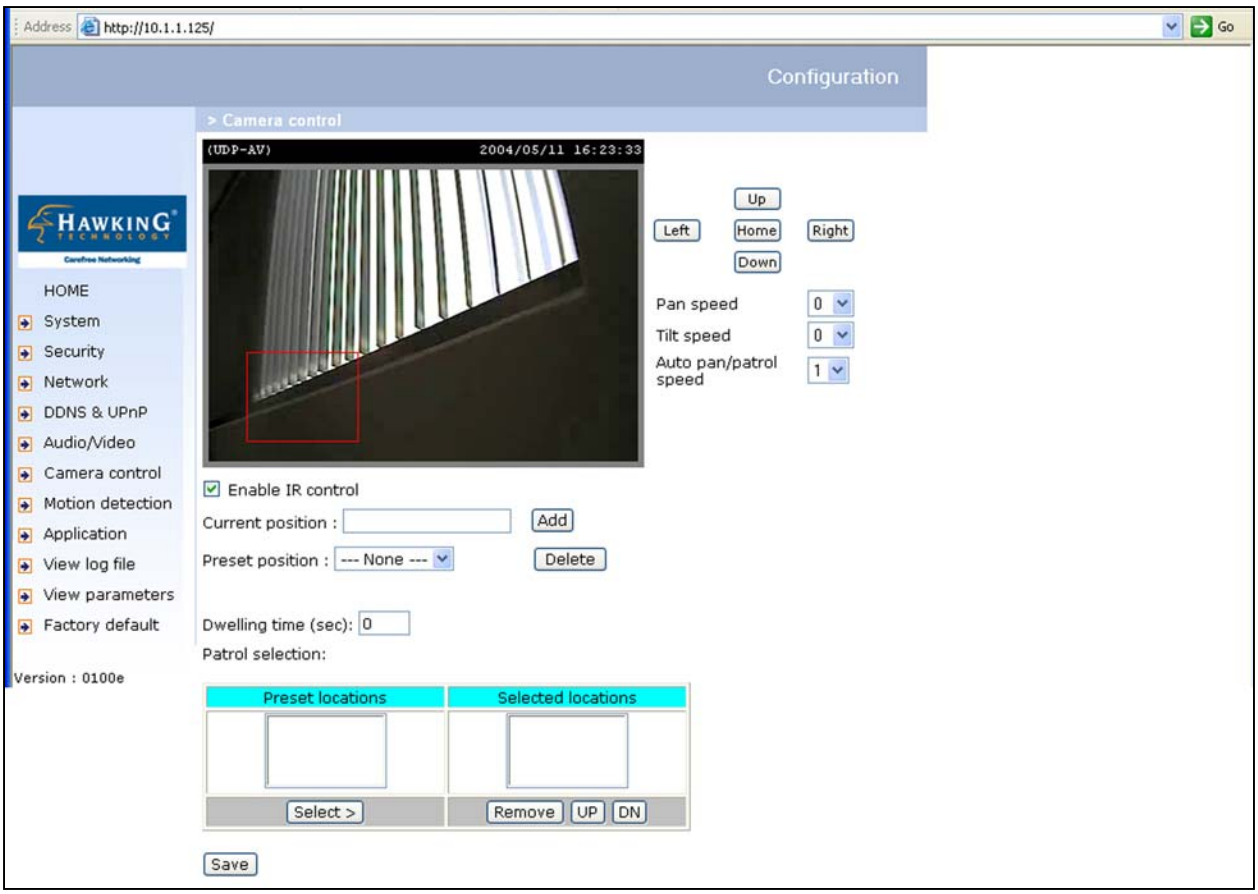
On the Camera Control page, there are two main function control areas:

Camera control area

The pan and tilt functions can be controlled with these buttons. The “Left”, “Right”, “Up”, and “Down” buttons aim the camera accordingly. The “Home” button aims the camera to the center.
Pan speed: This controls the speed of the camera’s horizontal movement. The greater the value, the greater the angular movement when utilizing the “Left” or “Right” functions.
Tilt speed: This controls the speed of the camera’s vertical movement. The greater the value, the greater the angular movement when utilizing the “Up” or “Down” functions.
Auto pan/patrol speed: This defines the speed of auto panning and patrol. The greater the value, the faster the speed.

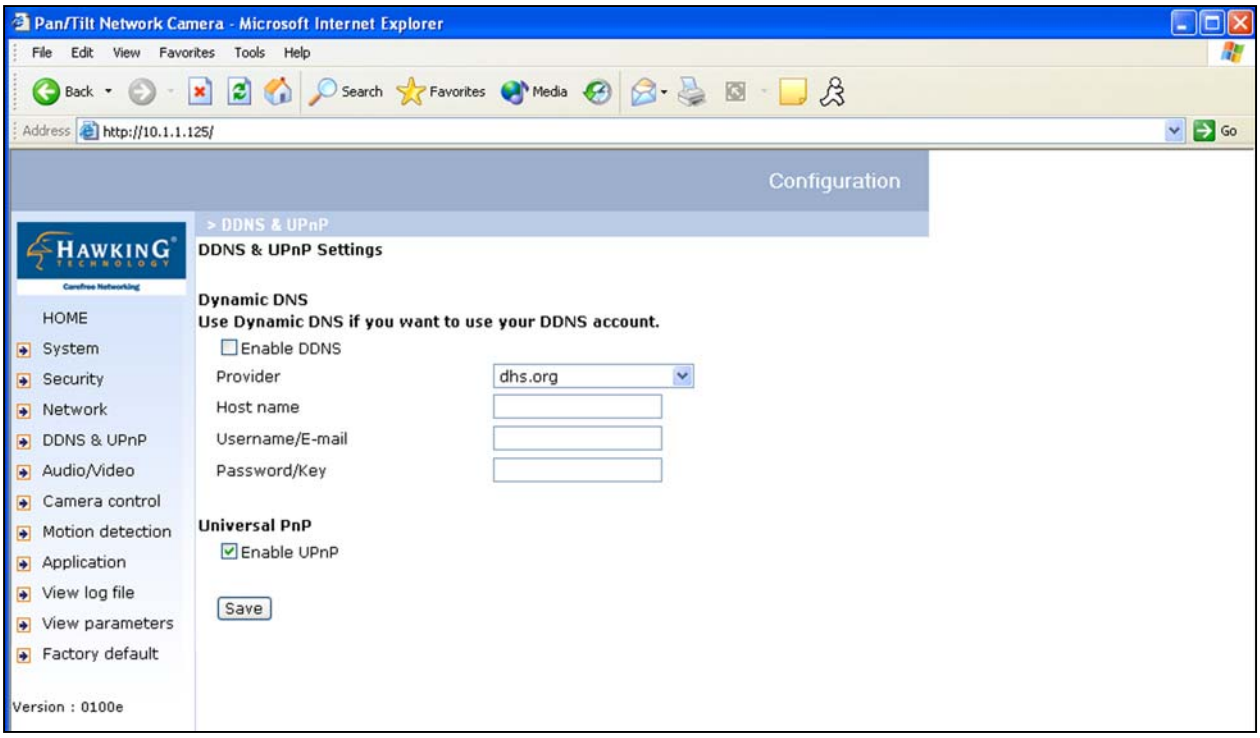
Preset function area

Enable IR control: Checking this box allows the Administrator to enable the IR controller (remote control) to move the camera. To allow controls only through URL commands or web pages, leave this box unchecked.
Current position: If the User wants to save the current view as a preset location, enter a name for each of the current video views at “current position” and click on the “Add” button. The camera allows for 20 preset locations.
Preset position: This keeps a list for preset positions. Clicking on the “Delete” button will remove the current selected position from the preset list.
Dwelling time: The value set here specifies:
1. The stop time of each preset location during auto patrol of the network camera.
2. The stay time at the left-most and right-most positions when the network camera is auto panning.
Patrol selection: After the User has saved a list of preset positions, the “Preset locations” box will also keep a list of the preset positions. And once the “Select>” button is clicked, the “Selected location” box will keep a list of the patrol stops. The “Remove” button removes the preset position from the patrol stops. The “UP”, “DOWN” buttons adjust the order of the patrol stops. Several preset positions can be added to the patrol stops. The camera can accept up to 40 patrol stops.
Save: The button is valid for “Pan speed”, “Tilt speed”, “Auto pan/patrol speed”, “Enable IR control”, “Dwelling time” and “Patrol selections”. In other words, after changing these settings, if the “Save” button is not clicked, the new settings will not take effect.



UPnP and DDNS Settings

Enable DDNS: This option turns on the DDNS function.
Provider: The provider list contains four hosts that provide DDNS services. Please connect to the service provider's website to find out the service charges.
Host name: If the User wants to use a DDNS service, this field must be filled. Please input the hostname that is registered in the DDNS server.
Username/E-mail: The Username or E-mail field is necessary for logging in the DDNS server or notifying the User of the new IP address. **Note:** when this field is input as "Username" the field that follows must be input as "Password".
Password/Key: Please input the password or key to get the DDNS service.
Enable UPnP: This turns on or off the UPnP function. When the UPnP is turned off, the camera cannot be found through Network Neighborhood in MS Windows XP. If the UPnP network component is installed in Windows XP, the hostname of the Network Camera will be shown with bracketed IP address in the Network Neighborhood. Ex: Network Camera with Pan/Tilt (96). That is: The hostname of the Network Camera is "*Network Camera with Pan/Tilt*", and the IP address of the Network Camera is *xxx.xxx.xxx.96,* depending on the last value of the IP address assigned to the network camera.
Save: Click on this button to save the current settings for the DDNS service and UPnP function.


Pan/Tilt Network Camera - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://10.1.1.125/
Go
Configuration
HAWKING TECHNOLOGY
Carefree Networking
HOME
System
Security
Network
DDNS & UPnP
Audio/Video
Camera control
Motion detection
Application
View log file
View parameters
Factory default
Version : 0100e
> DDNS & UPnP
DDNS & UPnP Settings
Dynamic DNS
Use Dynamic DNS if you want to use your DDNS account.
Enable DDNS
Provider
dhs.org
Host name
Username/E-mail
Password/Key
Universal PnP
Enable UPnP
Save

Remote Controller

The network camera comes with a remote controller to command its pan/tilt and other functions. The direction control area provides the same functions as you find on the camera's homepage. The Pan/Patrol/Stop functions are also the same as on the homepage.

Direction control area

Auto movement control area

Auto Patrol: This button commands the camera to patrol between the preset positions on the patrol list that was set on the "Camera control page". After each patrol cycle, the camera stops at the original staring position.
Auto Pan: This button commands the camera to pan from the current position to the left-most or right-most positions and back. After panning both vertical end positions, the camera would stop at the original starting position.
Center: This calibrates the camera's position to aim at the center as the camera boots up.
Stop: This stops the auto movements (auto pan & auto patrol) of the camera.

Viewing System Log

Click on the link on the configuration page to view the system log file. The content of this file provides useful information about configuration and connections after system boot-up.

Viewing System Parameters

Click on this link on the configuration page to view the entire system's parameter set. The content is the same as those in CONFIG.INI.

Factory default

"Factory default"
Click on this link on the configuration page to restore factory default settings. Any changes made so far will be lost and the system will be reset to the initial factory settings. After clicking on the "Restore" button and confirming, the system will restart and require the installer program to set up the network again.

"Calibrate"
Recalibrates the home position to the default center to recover the tolerance cased by some external forces. This function is the same as the "**Center**" button on the remote controller. Please note that there is no confirmation message box after clicking on the "**Calibrate**" button. The network camera will calibrate immediately.

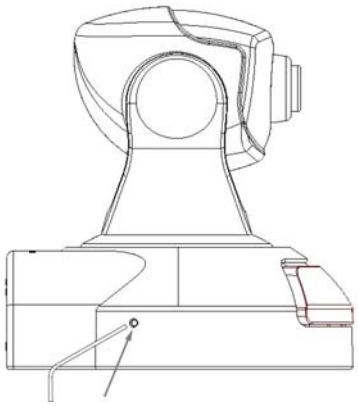
A. Troubleshooting

Status LED

After powering up, the network camera performs a self-diagnostic to detect any hardware defects. The following table lists the LED patterns in general. In case of any fatal errors, the LED will blink in a pattern other than those below.

Condition	LED Color
During self-diagnostic after power on	Blinking in interchanged green and red
Ethernet signal is lost	Red LED is blinking until Ethernet is detected
Before network is setup	Steady green until IP address is confirmed
After network is setup	Blinks green every second
Any hardware failure	Other patterns

Reset and Restore



On the left side (if facing it) of the camera there is a button hidden in the pinhole, as shown in the picture. It is used to reset the system or restore the factory default settings. Sometimes resetting the system sets the system back to its normal state. If the system problems remain after reset, restore the factory settings and install again.

RESET: Insert a fine pen tip, paper clip, or similar object end to click on the button.

RESTORE:

1. Insert a fine pen tip or paper clip and hold the button down.
2. Wait for the self-diagnostic to run twice.
3. Withdraw the pen tip, paper clip, or similar object as soon as the second self-diagnostic starts.

Restoring the factory defaults will erase any previous settings. Reset or restore the system after power on.

B. Frequently Asked Questions (FAQ)

Q What if I forget my password?
A After the Administrator's password has been assigned, all access to the network camera needs authentication. If you are one of the managed users, you have to ask the Administrator for the password. If you are the Administrator, there is no way to recover the root password except by restoring the factory default settings. Refer to Appendix A for the procedures.

Q Why can I not watch video from the network camera after it is authenticated?
A There are many possible scenarios regarding this problem:

1. If you have just installed the network camera and are unable to watch the video, check if the heartbeat LED is blinking or the lens cap is off. If the heartbeat LED is dim, perform the software installation again.
2. If the network camera is well installed and you are accessing it for the first time using Internet Explorer, adjust the security level of Internet Explorer to allow installation of plug-ins.
3. If the problem still exists after adjusting, and the message over the image window is showing "connecting", the network traffic may be too crowded.

Q What is the plug-in for?
A The plug-in provided by the network camera is used to display motion pictures and audio in Internet Explorer. If your system does not allow installation of any plug-in software, the security level of the web browser may need to be lowered. It is recommended that you consult the network supervisors in your office regarding adjustment of the security level. Software installation may be regulated in some offices.

Q Why is the timestamp different from the system time of my PC or notebook?
A The timestamp is based on the system time of the network camera. It is maintained by a real-time clock inside and can be automatically synchronized with the time-server if the network camera is connected to the Internet and the function is enabled. Differences of several hours may result from the time zone setting.

Q Can I install it on ceiling?
A Yes. There are flip and mirror options in the video configuration page to correct the images for upside down installation.

Q The image is not clear enough.
A Rotate the lens to adjust the focus after the network camera has been installed in the proper position. The image settings and white balance can be fine tuned to achieve the best visual effect. Also notice that the power line frequency must match the local utility to synchronize and minimize the effect of flickering fluorescent lights.

Q Why does the image not refresh regularly?
A Some anti-virus programs filter the received web content. It takes time to perform data examination and affect streaming applications such as that of the network camera. However, it only affects the HTP mode of the network camera. If the network allows only HTTP mode, disable the web filtering function of the anti-virus program temporarily. During this period, the User should be aware of the risk of malicious network activity.

Q I have opened motion detection windows but they will not work.
A If the motion detection windows are set up and names are given, check to see if the function is checked on the first line. While it is enabled, adjust the sensitivity and percentage to monitor the level indicator for best results.

Q I cannot hear any sound while watching.
A If there is "V_ONLY" shown above the image, click on connection type to uncheck "Disable audio". If there is "V" shown instead of "AV", the sound card in your PC may not have been properly installed. If "AV" is shown, check the audio source of the network camera, and make sure of whether you are using an internal or external microphone.

Q How many users are allowed to watch the network camera at the same time?
A Too many users requesting the real-time multimedia content will jam the network. For best results, the network camera is designed to accommodate a maximum of ten (10) users to watch and listen at the same time. For a larger number of users, it is recommended to build another web server to host the retrieved content from the network camera.

Q How fast is the video rate of the network camera?
A The MPEG-4 codec engine can process up to 30 frames per second internally. However, the total performance is subject to many coefficients such as:

1. Network throughput
2. Bandwidth sharing
3. Number of users
4. The complicated/detailed objects and movement in view
5. The power of your PC or notebook computer that is responsible for displaying images.

On average, the transfer rate in a general local network environment can reach over 200 kilobytes per second and approximately 10 to 20 pictures per second from a regular environment.

Q How can I keep the network camera as private as possible?
A The network camera is designed for surveillance purposes and has many flexible interfaces. The user authentication and special confirmation in installation can keep the network camera from unauthorized access. You may also change the HTTP port to a non-public number. The demo account is good to separate guests from normal users, and thus, you can easily block the guests anytime. You can check the system log to examine any abnormal activities and trace the origins.

Q Why can I not access the network camera when I set up some options in the application?
A Any incorrect network settings will make the network camera inaccessible. If this happens, restore the factory default settings following the procedures in Appendix A.

C. URL commands of the Network Camera

For some customers who already have their own web site or web control application, the network camera can be easily integrated through convenient URLs. This section lists the commands in URL format corresponding to the basic functions of the network camera.

Capture update Snapshot of JPEG image

/cgi-bin/video.jpg

The network camera will return the most up-to-date snapshot in JPEG format.

Query status of the digital input

/cgi-bin/getdi.cgi

The network camera will return the status of digital input.

Drive the digital output

/cgi-bin/setdo.cgi?do=<state>

The state is either “h” or “l”. “h” means high, that is NC is connected with COMMON, and “l” means “low”, that is NO is connected with COMMON.
For instance, typing http://192.168.0.201/cgi-bin/setdo.cgi?do=h in the address bar of the web browser will command the network camera, with IP address of 192.168.0.201, to set digital output to connect to NC with COMMON.

Restore factory default settings

/setup/restore.cgi

The network camera will automatically restart after restoring factory default configurations.

Restart system

/setup/reset.cgi

Restart the network camera without warning.

Page URL

The configuration page has a frame layout including an option list frame and an option page frame. Referenced URLs, except for the configuration page, direct users to the option page frame only. Some pages, such as image quality settings and preset settings, are opened in new windows for preview.
Only the Administrator can access these URLs.

Homepage name	**Referenced URL**
Client settings page	/client.html
configuration page	/setup/config.html
system option	/setup/system.html
security option	/setup/security.html
network option	/setup/network.html
DDNS & UPnP option	/setup/ddns.html
audio/video option	/setup/video.html
camera control option	/setup/ptframe.html
motion detection	/setup/motion.html
image quality option	/setup/image.html
application option	/setup/app.html
system log	/setup/logfile.html
system parameters	/setup/parafile.html
set factory default	/setup/factory.html

System resource URL

There are some images used on the homepage when the homepage layout is in image mode. The Administrator may use the following links to show the images saved in the network camera on another page.

Resource name	**Referenced URL**
system logo image	/pic/logo.gif
background image	/pic/wallppr.jpg

General format of command URL

Every configuration can be set through URL with the POST method, by the Administrator only.

<general format>
URL[?[name=value][&name=value]……]
<method>
POST
<authorized user>
root

System configuration URL

URL: /setup/system.cgi

NAME	VALUE	DESCRIPTION
host	<text string shorter than 15 characters>	system name
ledoff	yes	turn off front LED
	no	turn off front LED
method	keep	keep date and time unchanged
	auto	use NTP server to synchronize
	manu	directly adjust date and time
date	<yyyy/mm/dd>	year, month and date separated by slash
time	<hh:mm:ss>	hour, minute and second separated by colon
ntp	<domain name or IP address>	NTP server
zone	-12 ~ 12	time zone, 8 means GMT +8:00
updateInterval	one hour	Synchronize with NTP hourly
	one day	Synchronize with NTP daily
	one week	Synchronize with NTP weekly
	One month	Synchronize with NTP monthly

Security configuration URL

URL: /setup/security.cgi

NAME	VALUE	DESCRIPTION
rootpass	<text string shorter than 15 characters>	change root password
username	<text string shorter than 15 characters>	add new user
userpass	<text string shorter than 15 characters>	new user's password
deluser	<text string shorter than 15 characters>	existing user name
action	<blank>	validate demo users with “open”
open	yes	grant for demo account
	no	prohibit for demo account
dido	yes	permission for DIDO access
	no	prohibit for DIDO access

Network configuration URL

URL: /setup/network.cgi

NAME	VALUE	DESCRIPTION
reset	yes	enable installation at next boot
	no	disable installation at next boot
ip	<IP address>	The Network Camera's IP address
subnet	<IP address>	subnet mask
router	<IP address>	default gateway
domain	<text string shorter than 40 characters>	domain name of the Network Camera
dns1	<IP address>	primary DNS server
dns2	<IP address>	secondary DNS server
smtp1	<domain name or IP address>	primary SMTP server
mailto1	<string shorter than 80 characters>	mail recipient address
smtp2	<domain name or IP address>	secondary SMTP server
mailto2	<text string shorter than 80 characters>	mail recipient address
returnemail	<text string shorter than 80 characters>	return email address
ftpp	<number less than 65535>	FTP port
ftp1	<domain name or IP address>	primary FTP server
ftpuser1	<text string shorter than 15 characters>	user name for primary FTP server
ftppass1	<text string shorter than 15 characters>	password for primary FTP server
ftpfolder1	<text string shorter than 40 characters>	upload folder in primary FTP server

ftp2	<domain name or IP address>	secondary FTP server
ftpuser2	<text string shorter than 15 characters>	user name for secondary FTP server
ftppass2	<text string shorter than 15 characters>	password for secondary FTP server
ftpfolder2	<text string shorter than 40 characters>	upload folder in secondary FTP server
http	<number less than 65535>	HTTP port
controlport	<number less than 65535>	control Channel port
videoport	<number less than 65535>	video Channel port
audioport	<number less than 65535>	audio Channel port
lowband	yes	optimal for the low bandwidth
	no	keep the original way

DDNS & UPnP configuration URL

URL: /setup/ddns.cgi

NAME	VALUE	DESCRIPTION
enddns	anything	Enable DDNS function. This option must be resent whenever the URL is called, if DDNS function is to be enabled.
provider	1	DynDDNS.org(Dynamic)
	2	DynDDNS.org(Custom)
	3	TZO.com
	4	dhs.org
host	<the hostname>	The hostname of the Network Camera
usermail	username or mail	The login username of DDNS server or the email address registered in DDNS server.
passkey	password or key	The login password of DDNS server or the key given by the DDNS server.
enupnp	anything	Enable UPnP function. This option must be resent whenever the URL is called, if UPnP function is to be enabled.

Audio/Video configuration URL

URL: /setup/video.cgi

NAME	VALUE	DESCRIPTION
text	<text string shorter than 15 characters>	enclosed caption
size	1	half
	2	half x 2
	3	normal
color	B/W	monochrome
	<other than B/W>	color
quality	fixb	fix bit rate
	<other than fixb>	fix quantization
quan	1	lowest quality of video
	2	lower quality of video
	3	normal quality of video
	4	higher quality of video
	5	highest quality of video
bitrate	64000	set bit rate to 64K bps
	128000	set bit rate to 128K bps
	256000	set bit rate to 256K bps
	384000	set bit rate to 384K bps
	512000	set bit rate to 512K bps
	768000	set bit rate to 768K bps
	1000000	set bit rate to 1000K bps
	1200000	set bit rate to 1200K bps
frame	1	set maximum frame rate to 1 fps
	2	set maximum frame rate to 2 fps
	3	set maximum frame rate to 3 fps
	5	set maximum frame rate to 5 fps
	10	set maximum frame rate to 10 fps
	15	set maximum frame rate to 15 fps
	20	set maximum frame rate to 20 fps
	25	set maximum frame rate to 25 fps
	30	set maximum frame rate to 30 fps
flip	yes	flip image
	no	normal image

mirror	yes	mirror image
	no	*normal image*
improve	anthing	to improve audio quality in low bandwidth environment, this option must be resent whenever the URL is called, if it is to be enabled.
mphone	internal	set the audio source from built-in microphone.
	external	set the audio source from line-in microphone.

Camera control URL

URL: /setup/ptcamera.cgi

NAME	VALUE	DESCRIPTION
addpos	<the position name>	add preset location with its name
delpos	<the position name>	delete preset location with its name
selloc	<index value, 0~19>	add preset location into patrol list
irenable	yes	enable the pan/tilt control using remote controller
	no	disable the pan/tilt control using remote controller
speedpan	-5~5	change the horizontal aim-range
speedtilt	-5~5	change the vertical aim-range
speedapp	1~5	change the speed of auto pan or auto patrol.

Image quality configuration URL

URL: /setup/image.cgi

NAME	VALUE	DESCRIPTION
brightness	<-5 ~ 5>	adjust brightness of image
contrast	<-5 ~ 5>	adjust contrast of image
hue	<-5 ~ 5>	adjust hue of image
saturation	<-5 ~ 5>	adjust saturation of image
preview	<not required>	not save the parameters
restore	<not required>	recall the original settings
save	<not required>	save the parameters

Application configuration URL

URL: /setup/app.cgi

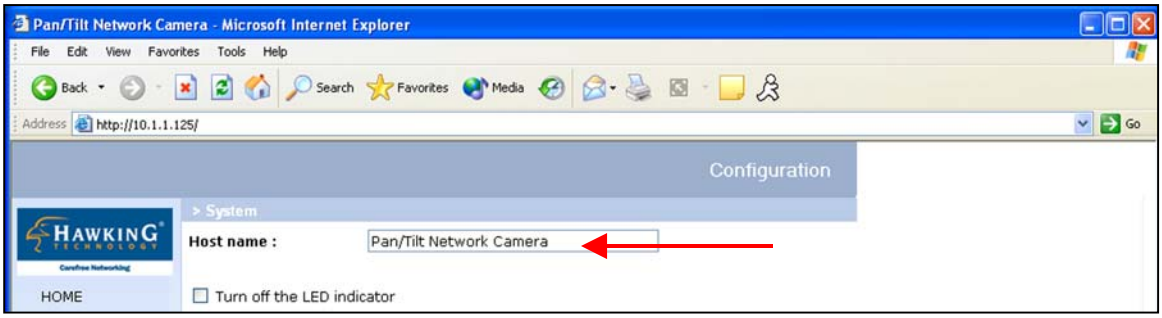
NAME	VALUE	DESCRIPTION
emode	<not required>	event mode application
smode	<not required>	sequential mode application
smethod	mail	upload snapshots by email
	ftp	upload snapshots by FTP
suffix	<not required>	FTP file with date and time suffix
delay	<integer>	seconds delay to detect next event
inter	<integer>	seconds delay to capture post-event
dihigh	< not required >	set DI high as trigger condition
dilow	< not required >	set DI low as trigger condition
dirise	< not required >	set DI rising as trigger condition
difall	< not required >	set DI falling as trigger condition
motion1	< not required >	set motion window1 as trigger condition
motion2	< not required >	set motion window2 as trigger condition
motion3	< not required >	set motion window3 as trigger condition
ioalarm	< not required >	trigger DO when DI condition matched
mdalarm	< not required >	trigger DO when motion detected
ioupload	< not required >	upload snapshot when DI condition matched
mdupload	< not required >	upload snapshot when motion detected
sinter	<integer>	seconds interval for sequential mode
sbegin	<hh:mm:ss>	time to start sequential mode
send	<hh:mm:ss>	time to stop sequential mode

D. How to View Your Camera via the Internet

The steps outlined below will help you install your camera behind a router:

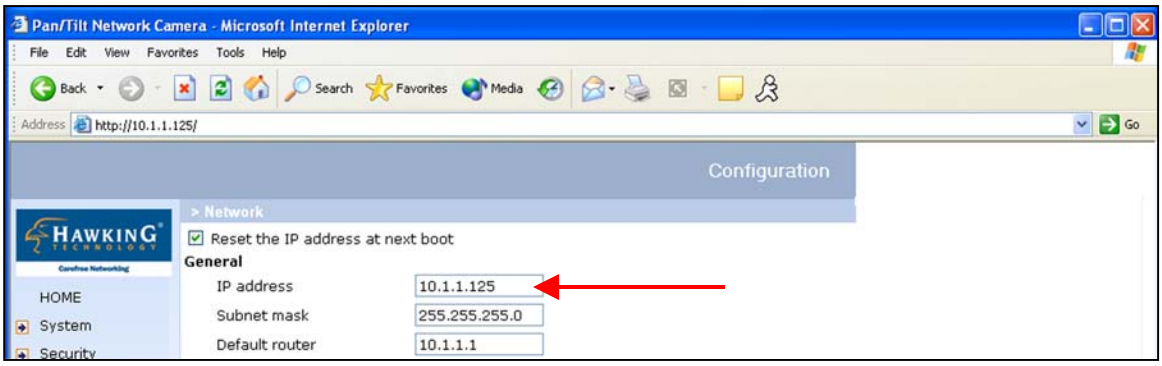
1. Camera Identification

   Open the camera's web page by typing its IP address in your web browser, and click on "System". If you intend to install multiple cameras, it is recommended that you give each camera a unique "Host name" in the field provided.

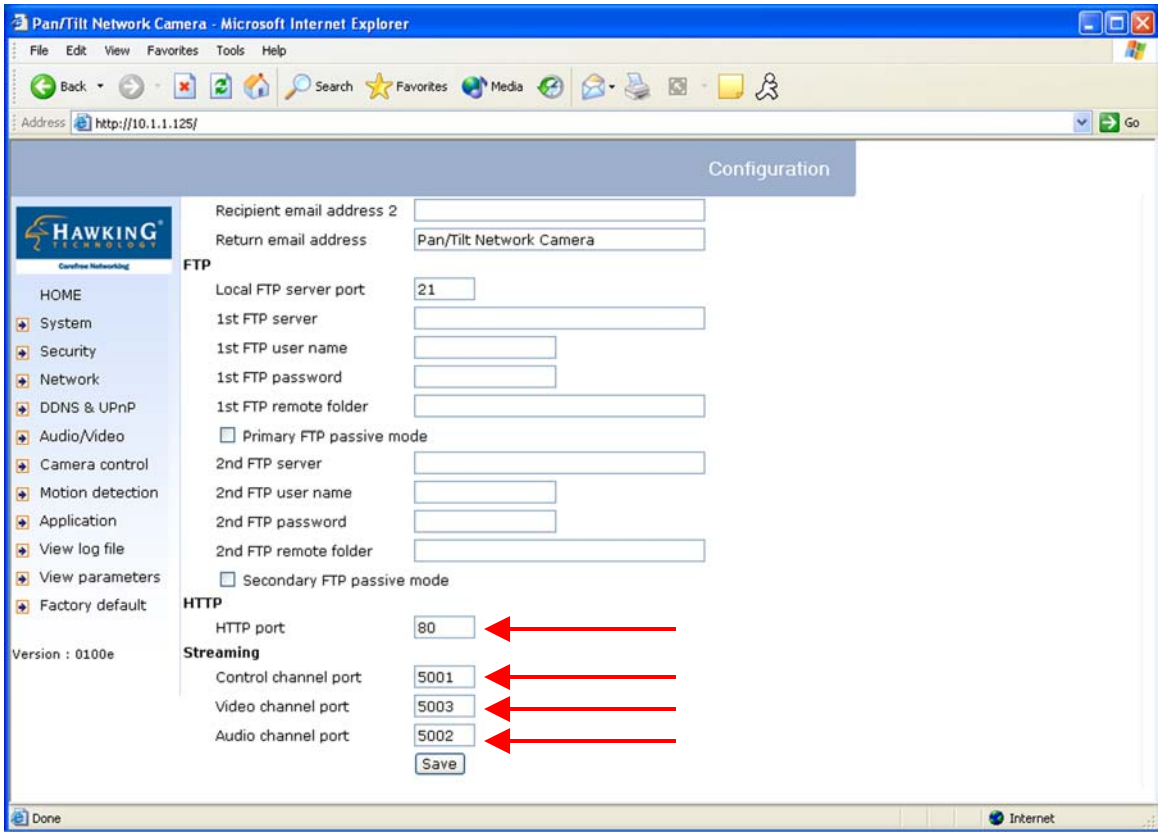


2. Ensure that the Camera Has a Local IP Address

   You will need a *local* IP address to install the camera and to be able to view it within the local area network (LAN). If you have already installed the camera, then you will have already obtained a local IP address via the IP Setup program or web browser. You can go back to the IP Setup program or the camera's web page at any time to change the camera's IP address. On the camera's web page, you can set the IP address under the heading "IP Address" in the "Network" section. The camera settings must correspond with your network's existing settings. Please note that the "Default Router" is your router's *local* IP Address.



3. Opening Ports



You will need to open unique ports for each camera in order to be able to view them remotely over the Internet. You will need to open these ports in the "Network" section of the camera's homepage for two reasons: a. if you need to use ports other than the default HTTP Port 80, Control Channel Port 5001, Video Channel Port 5003, and Audio Channel Port 5002, and b. when more than one camera is being installed on the network. Please note that if you are using only one camera, you can use the default ports without having to open a second port. Please also note that when installing the camera behind a router, you will need to open the corresponding ports (same as the open camera ports) on the *router* for *remote* viewing (i.e., over the Internet). In some instances when installing behind a router, Port 80 may not be available; please check your network settings or with your ISP to confirm. In the "Network" section of the network camera's homepage, the "HTTP" and "Streaming" fields allow for the opening of ports for the network camera. This will permit users' routers to support multiple network cameras. By default, Port 80 (on the router) is always open for network camera web server access. For each additional camera that you intend to install, to enable remote viewing (and/or audio and controls), you will need to assign unique HTTP and Streaming ports.

For example, assume that you have five network cameras that need to be installed and they have the following IP addresses:

10.1.1.125
10.1.1.126
10.1.1.127
10.1.1.128
10.1.1.129

You can open the HTTP port for each network camera, from port 81 to Port 85, as illustrated below:

Internet Camera 1 – IP 10.1.1.125, second "Web Server" port 81
Internet Camera 2 – IP 10.1.1.126, second "Web Server" port 82
Internet Camera 3 – IP 10.1.1.127, second "Web Server" port 83
Internet Camera 4 – IP 10.1.1.128, second "Web Server" port 84
Internet Camera 5 – IP 10.1.1.129, second "Web Server" port 85

The "Control channel port" field allows you to open a port for the network camera so that the pan/tilt functions can be controlled over the Internet. The default, Port 5001, is open for the "Control channel port" and you can define additional ports similar to the above. If you have five cameras, you will also need to open a unique control channel port for each camera. To avoid confusion with the "Video channel port" and "Audio channel port", please choose port numbers that have sufficient gaps between them and previously chosen port numbers. For example, if the first network camera has port numbers 5001, 5003, and 5002 open for the "Control channel port", "Video channel port" and "Audio channel port", respectively, you may want to choose ports 5011, 5013, and 5012 for the same channels of a second network camera. The example below illustrates how you might open the "Control channel ports" for five cameras:

Internet Camera 1 – IP 10.1.1.125, "Control channel port" 5011
Internet Camera 2 – IP 10.1.1.126, "Control channel port" 5021
Internet Camera 3 – IP 10.1.1.127, "Control channel port" 5031
Internet Camera 4 – IP 10.1.1.128, "Control channel port" 5041
Internet Camera 5 – IP 10.1.1.129, "Control channel port" 5051

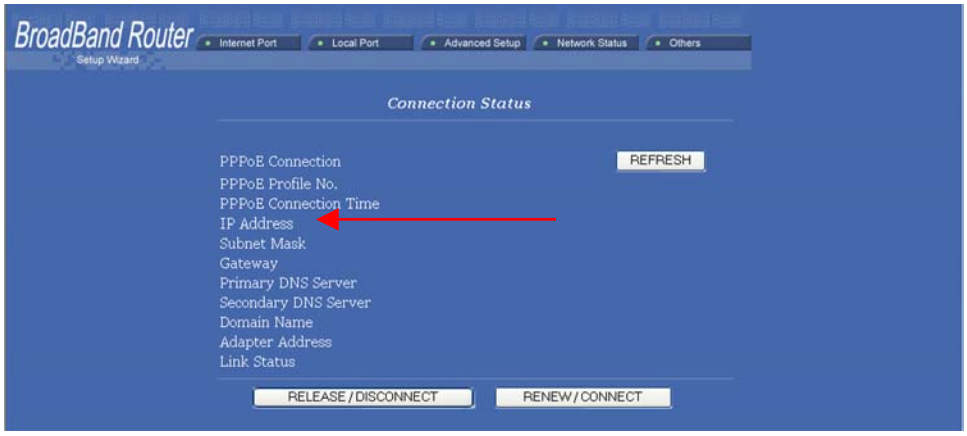
Use a similar method to assign ports for the "Video channel port" and "Audio channel port".

To view the camera over the Internet, you will need to configure your router for Port Mapping. The router's user manual will include instructions on how to do this. The remainder of Appendix D. will also include basic setup instructions on how to view the camera via the Internet. Please remember that for multiple cameras, you will need to open multiple ports per camera on your router: a. the HTTP port, b. the control channel port, c. the video channel port, and d. the audio channel port.

Save/Cancel:
After making sure that all settings in the "Network" section of the network cameras' webpage are correct, click on the **"Save"** button to store the settings for the network camera.

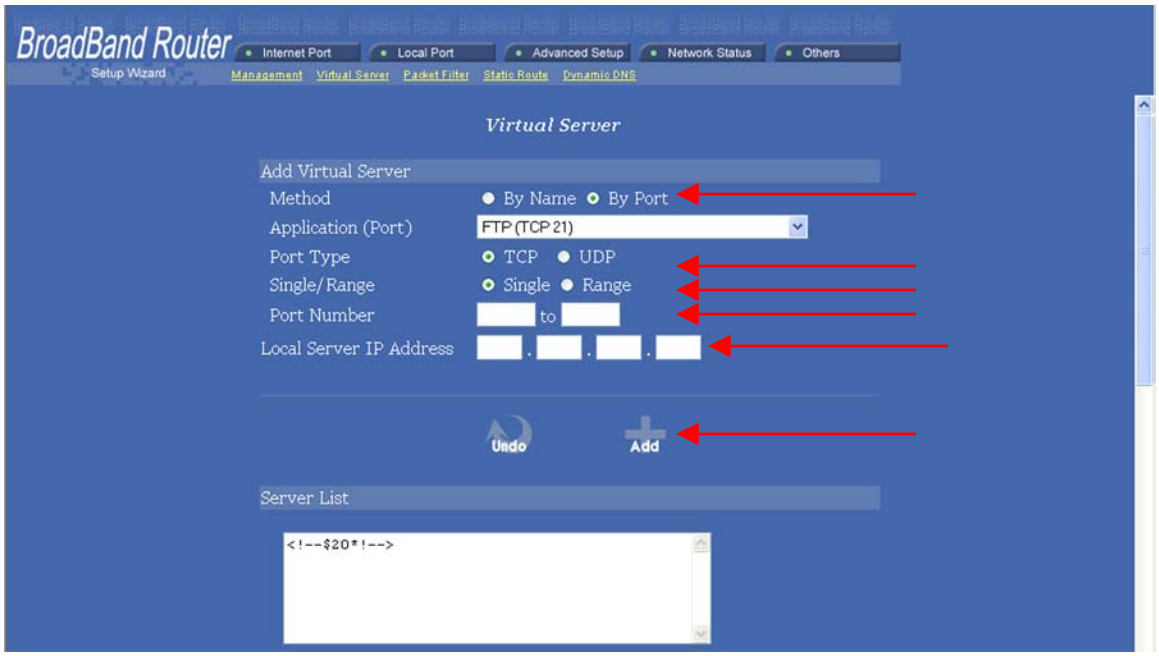
Steps 4 and 5 are applicable to any router you may have installed on your network.

4. Locate, Make a Note of Your Router's WAN (Public) IP Address



You will need to go to the router's web page (by typing in its *local* IP address in the web address bar) and find the "Status" (or similar) page. On this page, you should be able to locate the router's IP address. This IP address is the router's *public* IP address and will be *different* from its local IP address. You will use this IP address when enabling your camera to be viewed over the Internet. To view your camera remotely via the Internet, it is recommended (but not required) that you assign a static IP address to your router. You will need to contact your ISP to obtain a static IP address. When the camera is attached to the router, the static IP address will allow you to view the camera over the Internet. If you intend to view your camera from a remote location, it is recommended that, in a secure location, you make a note of this IP address for future reference. It is still possible to view your camera over the Internet with a dynamic IP address (using DHCP) for your router, but this is not the preferred method. With the dynamic option, your router's IP address will change periodically. Therefore, when the router's IP address changes, unless you intend to check the router's "Status" page regularly or you (and all authorized viewers) know the router's IP address at all times, you will not be able to view the camera over the Internet. (With the dynamic option, only the router's *public* IP address will change. The local IP address will remain the same. Therefore, you will still be able to access the camera and all other clients on the local area network from within the network.)

5. Use Port Mapping to Assign Virtual Server Ports



Typically, there is an "Advanced Setup" (or similar) section on the router's web page where you can find a "Virtual Server" or "Port Mapping" sub-section. To enable remote viewing over the Internet for your camera, you will need to open *virtual server ports* on your router. The steps outlined below should be similar for most routers:

i. Once you have located the "Virtual Server" (or similar) section, select the "By Port" method if this option is available.
ii. Select "TCP" in the "Port Type" field.
iii. Next, select "Single" if a "Single/Range" option is available. This is so that you can open individual ports rather than a range of them.
iv. In the "Port Number" field, enter "Port 80 to Port 80" if you intend to you use the camera's default port settings (discussed earlier in this Appendix). If you do not intend to use the default settings, or if you will be using multiple cameras, you will need to enter a different port number (i.e., 83, 84, etc.). The "Port Number" field, for example, will then read "Port 83 to Port 83", etc. In this case, the private Port 83 will now be opened as a public port. Please make sure that the public and private ports match (i.e., Port *83* to Port *83*). Please also remember that for multiple cameras, you will need to open *multiple* ports for each camera (as discussed earlier in this Appendix). Therefore, for the camera for which you just opened Port 83, you will also need to open ports such as Port 5031 (Control channel), Port 5033 (Video channel), and Port 5032 (Audio channel). For example, in the "Port Number" field, enter "Port 5031 to Port 5031".
v. After opening each port, click on "Add" (see figure on previous page).

6. Viewing the Camera from Outside the Network

Once the settings have been correctly entered and saved, authorized users can access the camera from outside the local area network as well as from within. To access the camera from outside the local area network in a remote location via the Internet, type (in sequence) the router's public IP address, a colon, and the port number assigned to the camera, in the address bar of your web browser. For example, if your router has a public IP address of "64.82.99.33", you would type the following into the address bar (assuming you assigned Port 85 to the camera): "http://64.82.99.33:85". From within the network, you would still use the camera's local IP address to access the camera. For example, if you were using the local IP address "10.1.1.129" for the camera, from within the network you would simply type: "http:// 10.1.1.129". (Although, typing in the router's public IP address, followed by a colon and port number, would work as well.)

E. Technical Specifications

System
CPU: Trimedia PNX1300
RAM: 16MB SDRAM
ROM: 2MB FLASH ROM

Networking
Protocol
- TCP/IP, HTTP, SMTP, FTP, Telnet, NTP, DNS and DHCP
Physical
- 10BaseT Ethernet or 100BaseT Fast Ethernet

Video
Algorithm Supported
MPEG-4 (short header mode)
Features
- Adjustable image size, quality and bit rate
- Timestamp and text overlay
- 3 motion detection windows
Resolution
- Up to 30/25 frames at 176x120 or 176x144
- Up to 30/25 frames at 352x240 or 352x288

Camera Specification
- 1/4 inch color CCD sensor
- 704x480 or 704x576
- 1 Lux / F2.0
- AGC, AWB
- Electronic shutter: Up to 1/100,000 sec

Lens
- Board lens with 4.3mm focal length, F1.8

Audio
- 24Kbps, 8Kbps(optional)

Microphone
- Omni-directional
- Frequency: 20 – 20,000Hz
- S/N ratio: more than 58dB

General I/O
- 1 sensor input(max. 12VDC 50mA)
- 1 relay output(max. 24VDC 1A, 125VAC 0.5A)

LED indicator
- Dual color status indicator

Dimension
- 104.5mm(L) * 104.5mm(W) * 113.6mm(H)

Weight
- NET. 336.6g

Power
- Consumption: near 8W
- Universal switching power-supply included
- Adapter input: 100-240VAC, 50/60Hz, 0.4A
- Adapter output: 12V DC, 1.5A

EMI & Safety
- CE, FCC

Operating Environment
- Temperature: 0-40°C/32-104°F
- Humidity: 95%RH

Viewing system requirement
Operating System
- Microsoft Windows 98SE/ME/2000/XP
Browser
- Internet Explorer 5.x or above